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Status of Atlantic Salmon (*Salmo salar* L.) Stocks of Insular Newfoundland (SFAs 3-14A), 2005

État des stocks de saumon atlantique (Salmo salar L.) de l'île de Terre-Neuve (ZPS 3 14A), 2005

M. F. O'Connell, J. B. Dempson, D. G. Reddin, C. E. Bourgeois, T. R. Porter, N. M. Cochrane, and D. Caines

Science Branch
Department of Fisheries and Oceans
Newfoundland Region
80 East White Hills Road
P.O. Box 5667
St. John's NL A1C 5X1

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ABSTRACT

The commercial Atlantic salmon fishery moratorium, implemented in insular Newfoundland in 1992, entered its 14th year in 2005. Returns of small salmon to northeast and east coast rivers in 2005 generally improved or remained similar relative-2004 and the moratorium means. Returns to south coast (SFA 11), Bay St. George, and northwest coast rivers declined from 2004 and in most instances also declined from the means. With the exception of Notre Dame Bay (SFA 4), there was an overall decline in returns of large salmon in 2005 compared-2004, accompanied by decreases from the means in half the cases. While the proportion of large salmon in total returns in 2005 increased or were similar relative-2004 for most rivers, the reverse applied in relation to the 1997-2004 moratorium means. Conservation egg requirements were met or exceeded in nine out of 23 rivers in 2005. In 2005, 57 (36%) out of 158 scheduled rivers in insular Newfoundland were closed to angling for varying periods of time due to low water levels and high water temperatures. Sea survival in 2005 decreased from 2004 for all rivers except Campbellton where the highest survival on record (11.4%) occurred; the lowest survival (2.5%) occurred in Conne River. Smolt production in 2005 decreased from 2004 in four out of five rivers, with Rocky River being the only one to show an increase. Where smolt production declined in 2005, returns of small salmon in 2006 are expected to be lower unless there is a compensatory increase in marine survival.

RÉSUMÉ

Le moratoire sur la pêche commerciale du saumon atlantique, entré en vigueur à l'île de Terre-Neuve en 1992, entamait sa 14e année en 2005. Les remontes de petits saumons dans les rivières du nord-est et de l'est se sont améliorées en 2005 ou sont restées stables par rapport à 2004 et aux moyennes de la durée du moratoire. Les retours sur la côte sud (ZPS 11), dans la baie St. George et dans les rivières de la côte nord-ouest ont diminué relativement à 2004 et, dans la plupart des cas également, par rapport aux moyennes. À l'exception de la baie Notre-Dame (ZPS 4), on note un fléchissement général du retour de grands saumons comparativement à 2004, accompagné de baisses par rapport aux moyennes dans la moitié des cas. Bien que la proportion de grands saumons dans les remontes totales ait augmenté ou soit demeurée stable par rapport à 2004 pour la plupart des cours d'eau, l'inverse est vrai par rapport aux moyennes du moratoire, de 1997 à 2004. La ponte a été suffisante pour satisfaire ou même dépasser les besoins de conservation dans neuf des 23 rivières. En 2005, la pêche à la ligne a été interdite dans 57 (36 %) des 158 rivières désignées de l'île de Terre-Neuve pendant différentes périodes, en raison de niveaux d'eau faibles et de températures de l'eau élevées. La survie en mer a diminué relativement à 2004 dans tous les cours d'eau, sauf dans la rivière Campbellton où le taux de survie était le plus haut jamais observé (11,4 %); le plus bas (2,5 %) a été enregistré dans la rivière Conne. La production de saumoneaux a fléchi dans quatre des cinq rivières par rapport à 2004, la rivière Rocky étant la seule où il y ait eu augmentation. Là où la production de saumoneaux a baissé en 2005, on s'attend à ce que la remonte de petits saumons diminue en 2006, à moins d'une augmentation compensatrice de la survie en mer.

INTRODUCTION

This paper presents the general status of Atlantic salmon stocks in Salmon Fishing Areas (SFAs) 3-14A of the Newfoundland Region (Fig. 1) in 2005. Catch and effort data from the recreational fishery, counts and total returns at fishways and counting fences, and egg depositions in relation to conservation requirements are examined in relation to historical data and management measures in effect in 2005. A summary of the life history and ecology of Atlantic salmon can be found in O'Connell et al. MS 2006.

MANAGEMENT MEASURES, PAST AND PRESENT

The moratorium on the commercial Atlantic salmon fishery in insular Newfoundland continued in 2005. The implementation of the moratorium in 1992 was accompanied by a commercial license retirement program and followed a major management plan introduced in 1984 (O'Connell et al. 1992a; May 1993; Mullins and Caines MS 1994), elements of which were continued into the quota years of 1990 and 1991 (O'Connell et al. MS 1992b) and the moratorium years (1992-2002). These regulations continue a long-standing history of management programs designed to prevent stock declines and to allow populations to rebuild (May 1993).

A quota on the number of small salmon (<63 cm in fork length) that could be retained in the Atlantic salmon recreational fishery was introduced in each SFA in 1992 and 1993. The quota was assigned for each SFA as a whole as opposed to individual river quotas. Only hook-and-release fishing was permitted after the quota was caught in each SFA. Quotas were eliminated in 1994. The seasonal bag limit for the retention of small salmon was lowered from eight to six fish in 1994, three to be caught prior to July 31 and three after that date. Hook-and-release fishing only was permitted after the bag limit of three was reached in each time period. These measures remained in effect in 1995-97. Returns of small salmon to many rivers in insular Newfoundland in 1997 were substantially lower than expected (Dempson et al. MS 1998; O'Connell et al. MS 1998). As a result of this and uncertainties regarding levels of future returns, the management plan for 1998 was much more conservative than for previous years. The seasonal bag limit for the retention of small salmon in insular Newfoundland was reduced to one, pending the results of an in-season review. As a result of the findings of the in-season review, anglers were allowed to additionally retain three small salmon from July 4 until the end of the angling season. Beginning on July 8, 1998, only the use of barbless hooks was permitted. As in previous years, the retention of large salmon (≥63 cm in fork length) was not permitted in insular Newfoundland in 2005. Except for rivers in SFA 13, large salmon in insular Newfoundland are comprised mainly of repeat spawning grilse (O'Connell et al. MS 2006).

A three-year management plan was implemented in 1999, a significant component of which was the introduction of a River Classification System for insular Newfoundland, used to develop retention levels based on the health of individual stocks, without jeopardising conservation goals. This was a major departure from previous years when stocks were managed on a more regional or SFA basis. Details of the three-year plan and a description of the River Classification System are provided in Anon. (1999). A five-year management plan was introduced in 2002 (Anon. 2002), wherein the River Classification System, though variously modified, was retained.

Special management measures were in effect for several rivers in 2005 and a number of rivers were closed for the season, details of which are provided in Anon. (2005). More details on openings and closures throughout the season on a river-specific basis, including times when rivers were closed due to high water temperatures and low water levels, are presented in Table 1. During the 2005 angling season, 57 out of 158 scheduled rivers (or tributaries of major rivers) in insular Newfoundland (36%) were closed for varying periods of time for environmental reasons. Most affected areas were SFAs 3, 4 and 14A where 11% to17% of the potential fishing days available were closed. In total for all SFAs, only 5% of all fishing days were closed, down substantially from the 37% reported for 2004.

As was the case for the period 1995-2004, there were fall hook-and-release fisheries (September 8 to October 7) in Gander River (SFA 4) and in Humber River (SFA 13) in 2005. A fall fishery was also introduced for Exploits River (SFA 4) in 2002, which continued in 2005 with the same opening and closure dates as for Gander and Humber rivers.

For the five-year period immediately preceding the commercial salmon fishery moratorium, the average number of recreational fishery licenses sold in Newfoundland and Labrador was 24,493. Maximum license sales prior to the moratorium were recorded in 1988 (26,445). By comparison, sales during the moratorium years were as follows:

Year	Licenses sold
1992	25718
1993	26508
1994	22596
1995	21489
1996	25553
1997	21403
1998	18490
1999	17927
2000	18316
2001	17876
2002	15937
2003	17146
2004	15657
2005 (preliminary)	13539

There has been a significant overall decline ($P = 0.0000$) in the numbers of licenses sold since 1992 ($y = 1,837,453 - 909.47x$; $r^2 = 0.872$, where y = number of licenses sold and x = year).

METHODS

Fishway, counting fence, swim-through survey (five rivers in Bay St. George), and egg deposition data for 2005 were added to that presented in O'Connell et al. (MS 2005). Recreational fishery data are provided for the period 1994-2005 and were derived from the License Stub Return System. The information for 2005 is preliminary at this stage. Recreational fishing effort was presented as rod days, defined as any day or part of a day on which an angler fishes.

Recreational fishery catch and effort data in 2005 were compared to means for 1994-2004. Counts, total returns (which typically are counts at counting facilities or from swim-through surveys plus angling removals below counting facilities or before swim-through surveys plus an adjustment for hook-and-release mortality), and percent of conservation egg requirement achieved in 2005 were compared to the pre-salmon moratorium mean 1984-91. This mean involves the years 1984-89 in which there were major management changes in the commercial fishery in the Newfoundland Region (O'Connell et al. 1992a) and includes 1990 and 1991 when quotas were in effect in each SFA in insular Newfoundland (O'Connell et al. MS 1992b). The mix of management measures in effect during 1984-89 on the one hand and the imposition of commercial quotas in 1990 and 1991 on the other, should be kept in mind when making evaluations involving the pre-moratorium mean. Two means were used for the moratorium years, 1992-96 and 1997-2002. The first corresponds to the period when fish otherwise caught in the commercial fishery escaped to rivers thereby increasing spawning escapements in many rivers, while the second is the period during which the progeny of the increased spawners were to return.

In addition to examining trends of individual stocks from counts at fishways or fish counting fences, salmon abundance can also be tracked in a collective manner where information on salmon returns to all rivers is combined to derive a composite index of abundance. Composite indices can be derived for specific regions as well as an index for insular Newfoundland as a whole. This approach complements individual assessments by providing an overall perspective of changes in salmon abundance. Details of the methodology used are summarized in Dempson et al. (2004). Index values for the pre-moratorium period 1984-91 were adjusted to account for marine exploitation. In all cases, exploitation rates used were the average of the median values obtained from nine rivers as described in Dempson et al. (2001) and were 45.3% for small salmon and 74.2% for large salmon.

References for river-specific methodologies used for the calculation of total river returns of small and large salmon and percent of conservation egg requirement achieved can be found in DFO (2001, 2002a, 2002b, 2003, 2004, 2005). Since recreational fishery data were not finalized for 2005, total returns and percent of conservation egg requirement achieved values are still preliminary where appropriate.

Means and 95% confidence intervals for ratios were calculated according to Cochran (1977).

RESULTS AND DISCUSSION

SMOLT-TO-ADULT (SMALL SALMON) SURVIVAL

Smolt-to-adult survival (repeat spawners included) for Campbellton River in 2005 (adult year) was the highest on record (Table 2). Survival for Northeast Brook, Trepassey (SFA 9) and Rocky River (also in SFA 9) in 2005 decreased from 2004, being most pronounced for the former. Conne River (SFA 11) had one of the lowest survivals on record in 2005, a marked decline from 2004. There were no smolt counts for Highlands River (SFA 13) since 2001 and hence survival cannot be determined. Survival for Western Arm Brook (SFA 14A) decreased substantially from 2004.

Figure 2 shows graphically trends in sea survival for the rivers mentioned above. Survival adjusted for marine exploitation (from Dempson et al. MS 1998) is also shown for Conne River, Northeast Brook, Trepassey, and Western Arm Brook. During the moratorium years, estimates of sea survival from smolts to adult small salmon are assumed to represent natural survival rates. Pre-moratorium adjusted (for commercial harvest) survival rates approaching 15% were achieved in Conne River and Northeast Brook, Trepassey. Ocean survival for both of these stocks fell throughout the late 1980s and early 1990s. Despite major changes to fisheries and corresponding reductions in marine exploitation, sea survival rates for Conne River and Northeast Brook, Trepassey remain low, as highlighted by the adjusted sea survival rates. The same statement holds for Western Arm Brook, if several years prior to 1985 (the earliest year shown in Fig. 2) presented in Table 2 were adjusted for marine exploitation.

SMOLT PRODUCTION

Smolt production for Rocky River in 2005 increased over 2004 (21%). Campbellton River (8%), Northeast Brook, Trepassey (12%), Conne River (17%), and Western Arm Brook (50%) all showed declines (Table 2).

RECREATIONAL FISHERY, COUNTS, AND TOTAL RETURNS

Recreational catches of small and large salmon for insular Newfoundland (SFAs 3-14A combined) are presented in Appendix 1a. Data for insular Newfoundland were also rolled into four subdivisions, Northern Peninsula East and Eastern (SFAs 3-8), South (SFAs 9-11), Southwest

(SFAs 12-13), and Northern Peninsula West (SFA 14A) and are shown in Appendix 1b-e. Data for each individual SFA are shown in Appendix 1f-q. Calculation of catch per unit of effort (CPUE) is in terms of small and large retained and released fish combined. Counts of small and large salmon and associated pre-moratorium and moratorium means are presented in Tables 3 and 4.

Entire Insular Newfoundland (SFAs 3-14A)

Recreational fishery: The total catch of small salmon (retained + released fish), retained catch of small salmon, and number of large salmon released in 2005 were the lowest of the time series (Fig. 3). Effort expenditure was also the lowest on record. Catch per unit of effort (CPUE) decreased from 2004 and was below average.

Indices: Figure 4 illustrates the collective index of small and large salmon abundance for all of insular Newfoundland. When adjusted for marine exploitation, the highest abundances of small salmon occurred during pre-moratorium years (1984-91). Since then, overall abundance has declined. The index value for 2005 reversed a trend of steady increase in recent years that approached pre-moratorium levels. Average index values for the period 1997-2003 were somewhat higher than for 1992-96. Thus the paradox is that while numbers of small salmon returning to some rivers have improved, the total stock size is still less than that estimated prior to the moratorium. Abundance of Newfoundland large salmon also declined substantially reaching its lowest values in the early 1990s. Since then, the abundance of large salmon on average has improved such that total stock size is somewhat similar to that which occurred prior to the closure of the commercial salmon fishery (the index value for 2005 was close to the 1997-2004 average).

Northern Peninsula East and Eastern (SFAs 3-8)

Recreational fishery: Total and retained catches of small salmon in 2005 decreased slightly from 2004 and were below the means (Fig. 5). The number of large salmon released increased over 2004 and was close to average. Effort expenditure in 2005 was the lowest on record; however CPUE increased over 2004 and the mean.

Total returns – northeast coast: SFA 4: Information on total returns of small (Table 5 and Fig. 6) and large (Table 6 and Fig. 5) salmon is available for Exploits River (Bishop's Falls), Gander River, and Campbellton River. Returns of small salmon to Exploits River in 2005 were similar to 202004 and increased over all means (Table 7). Returns of large salmon increased over 2004 and the means (Table 8). The number of small salmon returning to Campbellton River in 2005 increased over 2004 and means; large salmon showed an increase over 2004 and the 1977-2004 mean but remained similar to the 1992-96 mean. Returns of small salmon to Gander River in 2005 were similar to 2004 and increased over the 1984-91 and 1997-2004 means; there was a decrease relative to the 1992-96 mean. Returns of large salmon decreased slightly from 2004 but remained similar to the 1997-2004 mean; returns increased over the 1984-91 and 1992-96 means.

The proportion of large salmon in total returns to Exploits River and Campbellton River in 2005 increased over 2004 while the proportion for Gander River in 2005 was similar to 2004 (Table 9 and Fig. 7). Exploits River increased relative to the means but the reverse was true for Campbellton River. The proportion for Gander River increased over the 1984-91 and 1992-96 means but decreased in relation to the 1997-2004 mean.

Total returns – east coast: SFA 5: Information on total returns of small (Table 5 and Fig. 8) and large (Table 6 and Fig. 8) salmon is available for Middle Brook, the lower Terra Nova River, and Northwest River, Terra Nova National Park. Returns of small (Table 7) salmon to Middle Brook in 2005 were similar to 2004 and the 1997-2004 mean; there was a decrease relative to the 1992-96 mean and an increase over the 1984-91 mean. Large salmon increased in relation to the 1984-91 mean but decreased from 2004 and the remaining means (Table 8). Returns of small salmon to Terra Nova River decreased from 2004, were similar to the 1992-96 mean, and increased over the 1984-91 and 1997-2004 means. The number of large salmon increased only in relation to 1984-91

mean. Returns of small salmon to Northwest River were similar to 2004 but above the means; large salmon increased over 2004 and the means.

The proportion of large salmon in total returns to Middle Brook in 2005 decreased from 2004, remained similar in Terra Nova River, but increased in Northwest Brook (Table 9 and Fig. 9). Middle Brook and Terra Nova River showed increases over the 1984-91 means but decreased relative to the remaining means. The proportion for Northwest Brook in 2005 was slightly below the means.

Indices – northeast and east coasts: The abundance index of small salmon returns for all monitored rivers combined in SFAs 3 to 8 illustrate an improvement in runs during the past few years (Fig. 10). However, over the long term, salmon abundance has declined with the highest abundances, adjusted for marine exploitation, occurring during the mid-1980s. Average total stock abundance decreased from pre-moratorium levels during the initial five years of the salmon fishery moratorium (1992-96) and again during the period 1997-2003. Abundance of large salmon continued to decline from the mid-1980s to mid-1990s before increasing substantially by 1996. High abundances persisted for several years before falling to relatively lower values in 2000-02 with some improvement during the past few years.

South (SFAs 9-11)

Recreational fishery: Total and retained catches of small salmon in 2005 decreased from 2004 and were below the means (Fig. 11). The number of large salmon released in 2005 increased somewhat over 2004 and approached the mean. Effort expenditure was among the lowest recorded while CPUE decreased markedly from 2004 but remained average.

Total returns: SFA 9: Information on total returns of small (Table 5 and Fig. 12) and large (Table 6 and Fig. 12) salmon is available for Northeast Brook, Trepassey and Rocky River. Total returns of small salmon to Northeast Brook in 2005 were similar to 2004 but below the means (Table 7). Large salmon decreased from 2004 and the means (Table 8). Numbers of small salmon returning to Rocky River increased over 2004 and the means. Large salmon decreased relative to 2004 (highest return on record) and the 1997-2004 mean but increased over the other means.

The proportion of large salmon in total returns to Northeast Brook in 2005 decreased from 2004 and the means (Table 9 and Fig. 13). The proportion for Rocky River increased over the 1984-91 and 1991-96 means but decreased in relation to 2004 and the 1997-2004 mean.

SFA 11: Information on total returns of small (Table 5 and Fig. 12) and large (Table 6 and Fig. 12) salmon is available for Conne River and Little River. Owing to budget cuts, Northeast River, Placentia has not been monitored since 2002. Returns of small and large salmon to Little River in 2005 increased only in relation to the 1984-91 mean. The same observation is true for small salmon for Conne River while for large salmon, returns decreased relative to 2004 and all means.

The proportion of large salmon in total returns to Little River in 2005 increased over 2004 and remained similar to the 1984-91 mean but was below the 1992-96 and 1997-2004 means (Table 9 and Fig. 13). The proportion for Conne River increased over 2004 and the 1992-96 mean and was similar to the mean for 1984-91; it decreased relative to the 1997-2004 mean.

Indices: The index of small salmon returns for all south coast rivers combined clearly illustrates that salmon abundance fell dramatically during the commercial fishery moratorium and has remained at relatively low levels with little sign of improvement (Fig. 14). A similar situation applies to large salmon, although there was some increase from 1998 to 2000 before declining again.

Southwest (SFAs 12-13)

Recreational fishery: Total catch of small salmon in 2005 decreased from 2004 and the mean while the number of small salmon retained was average (Fig. 15). The number of large salmon released decreased from 2004 and the mean. Effort expenditure decreased from 2004 and the mean and CPUE was one of the lowest on record.

Total returns: SFA 13: Information on total returns of small (Table 5 and Fig. 16) and large (Table 6 and Fig. 16) salmon is available for Highlands River, Crabbes River, Middle Barachois River, Robinsons River, Fischells River, Flat Bay Brook, and Harry's River. All rivers except Fischells River and Flat Bay Brook had decreases in returns of small salmon in 2005 relative to 2004; all except Fischells River, Flat Bay Brook, and Harry's River decreased compared to the means (Table 7). Returns of large salmon increased or remained the same in relation to 2004 for Highlands River, Middle Barachois River, and Flat Bay Brook while the remainder showed decreases (slight in the case of Harry's River) (Table 8). All except Middle Barachois River and Robinsons River increased over the means.

Proportions of large salmon in total returns in 2005 for Highlands, Crabbes, Middle Barachois, and Harry's rivers increased or were similar relative to 2004 and the means (except Harry's) (Table 9 and Fig. 17). The remaining rivers had varying responses in relation to 2004 and the means.

Indices: Insufficient data exists to derive a composite index of abundance for the 1984-91 pre-moratorium period. However, with respect to the 1992-2001 period, abundance has fluctuated but has also been followed by a substantive increase in recent years to the highest value recorded in 2004 (Fig. 18); the value for 2005 however reversed this trend. In contrast with the abundance of small salmon, abundance of large salmon has shown a consistent increase over time with the highest values recorded occurring during 2003-05.

Northern Peninsula West (SFA 14A)

Recreational fishery: Total and retained catches of small salmon in 2005 were the lowest on record and the number of large salmon released the second lowest (Fig. 19). Effort expenditure was the lowest on record while CPUE was second lowest.

Total returns: Information on total returns of small (Table 5 and Fig. 20) and large (Table 6 and Fig. 20) salmon is available for Torrent River and Western Arm Brook. The count for Lomond River was terminated in 2005 due to budget cuts. Returns of small salmon to Torrent River in 2005 increased only in relation to the 1984-91 mean (Table 7). Returns of large salmon increased over 2004 and all means (Table 8). The number of small and large salmon for Western Arm Brook decreased from 2004 and the 1997-2004 means, but increased in relation to the 1984-91 and 1992-96 means.

The proportion of large salmon in total returns to Torrent River in 2005 increased over 2004 and the means (Table 9 and Fig. 21). That of Western Arm Brook decreased from 2004 and the 1997-2004 mean but increased over the 1984-91 and 1992-96 means.

Indices: When the abundance of small salmon returning to northern peninsula west rivers (Lomond River, Torrent River and Western Arm Brook) are examined together, there has been no appreciable change over time when data for the 1984-91 pre-moratorium period are adjusted for marine exploitation (Fig. 22). Indeed, while there have been appreciable improvements in numbers of salmon returning to these rivers, total stock size when adjusted for past marine exploitation, shows that abundance has remained flat with no increased production resulting from the higher spawning escapements that have occurred. In contrast with small salmon, abundance of large

salmon has shown an increase over time but with considerable annual variability both among and within rivers.

NET MARKS

The incidence (%) of net-marked fish has been determined at counting facilities for a number of rivers throughout insular Newfoundland since 1994. The results for small and large salmon combined are presented below:

River	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gander River	15.9	8.9	12.2	15.9	2.9	5.2	3.9	3.7	3.0	4.6	3.1	0.6
Campbellton River	6.2	5.0	4.3	4.3	5.8	4.1	11.4	4.9	3.7	7.5	3.7	5.8
Middle Brook				15.8	11.6	4.5	7.7	3.0	7.0	4.2	3.2	4.4
Terra Nova River				2.9	1.2	3.1		4.8	4.1	3.0	1.3	0.8
Northeast River, Placentia							7.5					
Conne River	18.6	7.1	6.2	7.2	3.7	4.0	3.3	8.0	2.6	6.1	3.9	5.6
Harry's River			0.6	9.3	1.8	0.1	2.6					
Humber River		1.4	2.6	7.6	4.1	2.4						

The incidence of scarring for Campbellton River in 2005 increased over 2004. It should be noted that, unlike the other rivers, marks recorded for Campbellton River include all marks (e.g. resulting from encounters with predators, etc.) and not just net marks. Fish were counted with a video system in this river and it is not possible to accurately distinguish the various markings. It was possible to determine the incidence of net marks for the remaining rivers. After 1999, values for Gander River were determined at the fishway in Salmon Brook tributary and at the counting fence in other years; the incidence for 2005 was the lowest recorded. There was an increase relative to 2004 for Middle Brook while Terra Nova River had the lowest proportion on record. Conne River showed an increase over 2004. Net marks were likely the result of encounters with both legally set gear for other species and illegal gear in the marine environment and with illegal gear in freshwater. It is not possible to estimate the extent of such removals, therefore, total returns considered in the context of being equivalent to total production during the moratorium, have to be regarded as minimum values.

PERCENT OF CONSERVATION EGG REQUIREMENT ACHIEVED

Northern Peninsula East and Eastern (SFAs 3-8)

Northeast coast, SFA 4: The Exploits River as a whole achieved half of its conservation egg requirement in 2005 while the lower Exploits segment fell slightly below requirement (Table 10 and Fig. 23). The middle Exploits received the highest egg deposition (half of requirement) on record in 2005 while the upper segment remained well below requirement. Egg deposition for the entire Exploits exceeded all means while the lower Exploits increased only in relation to the 1984-91 mean. It should be noted that values included in the pre-moratorium mean (1984-91) for the upper Exploits were the result of artificial stocking of this segment while egg deposition in subsequent years resulted from natural spawning of adults ascending the Red Indian Lake fish passage. The Exploits River was the site of major Atlantic salmon enhancement programs beginning in the late 1950s and extending to the early 1990s (O'Connell et al. 1983; O'Connell and Bourgeois 1987; Bourgeois et al. MS 2001). Despite increased escapements in over the past decade there has not been any appreciable change in egg deposition owing to new productivity.

Egg deposition in Campbellton River exceeded conservation requirement in all years. The percent met in 2005 increased over 2004 and the means.

In 2005, Gander River attained conservation requirement, for the second time since 1999. The percent achieved in 2005 increased over 2004 and the means.

East coast, SFA 5: Middle Brook achieved conservation egg requirement in all years of the moratorium. The percent achieved in 2005 increased over 2004 and the pre-moratorium mean, but remained below the moratorium mean.

Terra Nova River has yet to attain egg requirement. It should be noted however that accessible habitat for anadromous Atlantic salmon in this river more than doubled with the establishment of a fish passage at Mollyguajeck Falls in 1985, as part of an enhancement initiative that started in that year (O'Connell et al. MS 2000). Initial enhancement activity started in 1952 with the construction of a fishway around impassable falls in the upper river (O'Connell et al. MS 2000; Mullins et al. 2003). The level of attainment of egg requirement in 2005 decreased from the record high in 2004 but remained above the means.

The percent of egg requirement reached in Northwest River in 2005 was the highest on record. In 1948, the area above Northwest Falls was made accessible to anadromous salmon with the blasting of a fish passage (Cote et al. 2001). Prior to 1948 only the first 3.2 km of the river were accessible.

Data for Indian Bay Brook are only available for 1997-99 and conservation egg requirement was achieved in all years.

South (SFAs 9-11)

SFA 9: There is no information available for Biscay Bay River since 1996. Northeast Brook, Trepassey has reached egg requirement in all years of record. The level achieved in 2005 decreased from 2004 and the means.

Rocky River was the recipient of Atlantic salmon enhancement initiatives during the period 1984-96 which included a fishway around an impassable waterfall at the mouth (Bourgeois 1998; Mullins et al. 2003). This river achieved just over half of its egg requirement in 2005, an increase over the means.

SFA 10: There is no information available for Northeast River, Placentia since 2002. This river exceeded egg requirement in all years.

SFA 11: Egg deposition in Little River in 2005 decreased substantially from 2004, to the point where requirement was barely attained (there was an increase relative to the 1984-91 mean but decreases in relation to the others). This system was stocked with swim-up fry in the 1980s and 1990s (Bourgeois et al. 1997).

The level of egg requirement met (below) in Conne River in 2005 also decreased markedly from 2004 (there were decreases in relation to all means).

Southwest (SFAs 12-13)

SFA 13: Of the seven rivers only Fischells River and Flat Bay Brook achieved egg requirement in 2005 and they were also the only ones to surpass 2004. Collectively, levels achieved were higher than the means in most cases.

There is no information available for Pinchgut Brook, a tributary of Harry's River, since 2002 or for Humber River since 1999 although returns to the entire river have been monitored since.

Northern Peninsula West (SFA 14A)

As mentioned above, there was no count for Lomond River in 2005.

Torrent River likewise achieved egg requirement in 2005, increasing over the 1984-91 and 1997-2004 means but decreasing from 2004 and the 1992-96 mean. An enhancement program was carried out in this river in 1965-76, which included the construction of a fishway around an impassable waterfall located 2 km from the mouth (Mullins et al. 2003).

Egg requirement was achieved in Western Arm Brook in 2005; there were decreases relative to 2004 and the 1997-2004 mean but increases over the other two means.

SUMMARY AND CONCLUSIONS

Returns of small salmon to northeast and east coast rivers in 2005 generally improved or remained similar compared to 2004 and the moratorium means. Returns to south coast (SFA 11), Bay St. George, and northwest coast rivers decreased from 2004 and in most instances also from the means. With the exception of Notre Dame Bay (SFA 4), there was an overall decline in returns of large salmon in 2005 compared to 2004, accompanied by decreases from the means in half these cases. Overall, trends in abundance observed south coast monitored stocks appear to be the most problematic

In previous documents, in addition to providing information on the status of stocks for the most recent year in relation to the previous year and historical means, commentary was also included on the performance of stocks relative to management measures, particularly the commercial salmon fishery moratorium, and marine mortality, etc. Such discussion is not included this time around and instead the reader is referred to an in depth assessment of these subjects provided by Dempson et al. (2004) and Dempson et al. (2006).

Conservation egg requirements were met or exceeded in nine out of 23 rivers in 2005.

There was a substantial reduction in the number of angler days lost due to river closures for environmental reasons in 2005 compared to 2004. This must be kept in mind when comparing catch and effort information in 2005 with that of 2004 and the means and is why rivers for which the only information available are recreational catch and effort data are not routinely assessed.

Sea survival in 2005 ranged from a high of 11.4% for Campbellton River to a low of 2.5% for Conne River. Smolt production in 2005 decreased from 2004 in four out of five monitored rivers, the exception being Rocky River. When smolt production decreases, returns of small salmon are expected to be lower in the following year, unless correspondingly there are increases in marine survival that offset decreased numbers of smolts. The converse holds when there are increases in smolt production.

REFERENCES

Anon., 1999. Integrated management plan for Newfoundland and Labrador Atlantic salmon. Fish. Mgmt. Br., NL Region. St. John's, NL.

2002. 2002-2006 Atlantic salmon integrated management plan – Newfoundland and Labrador. Fish. Mgmt. Br., NL Region. St. John's, NL.

2005. Anglers Guide 2005. Comm. Br., DFO, NL Region, St. John's, NL.

Bourgeois, C.E. 1998. Assessment of the introduction of Atlantic salmon, *Salmo salar*, into Rocky River. p. 225-233. *In*: Cowx, I. G. [ed.] Stocking and introduction of fish. Fishing News Books. 456 pp.

Bourgeois, C.E., Davis, J.P., Murray, J., and Mercer, V. 1997. Status of three enhanced Atlantic salmon (*Salmo salar* L.) stocks of the Newfoundland Region. DFO Atlantic Fisheries Res. Doc. 97/33.

Bourgeois, C.E., Murray, J., and Mercer, V. MS 2001. Status of the Exploits River stock of Atlantic salmon (*Salmo salar* L.) in 2000. DFO Can. Sci. Advis. Sec. Res. Doc. 2001/026.

Cochran, W.G. 1977. Sampling techniques. John Wiley & Sons, Inc. 428 pp.

Cote, D., Wissink, R. and Simpson, M. 2001. Northwest River: a discussion paper of management options available to Terra Nova National Park. Eco. Sci. Rev. Rep. 15: 40 pp.

Dempson, J.B., O'Connell, M.F., and Schwarz, C.J. 2004. Spatial and temporal trends in abundance of Atlantic salmon, *Salmo salar*, in Newfoundland with emphasis on impacts of the 1992 closure of the commercial fishery. Fish. Mgmt. and Ecol. 11: 387-402.

Dempson, J.B., O'Connell, M.F., Reddin, D.G. and Cochrane, N.M. 2006. Stock status summary for Atlantic salmon from Newfoundland and Labrador. DFO Can. Sci. Advis. Sec. Res. Doc., 2006/028.

Dempson, J.B., Reddin, D.G., O'Connell, M.F., Helbig, J., Bourgeois, C.E., Mullins, C.C., Porter, T.R., Lilly, G., Carscadden, J., Stenson, G.B., Kulka, D., and Knoechel, R. 1998. Spatial and temporal variation in Atlantic salmon abundance in the Newfoundland-Labrador region with emphasis on factors that may have contributed to low returns in 1997. DFO Can. Stock Assess. Res. Doc. 98/114.

Dempson, J.B., Schwarz, C.J., Reddin, D.G., O'Connell, M.F., Mullins, C.C., and Bourgeois, C.E. 2001. Estimation of marine survival rates on Atlantic salmon (*Salmo salar* L.) stocks in Newfoundland, Canada. ICES J. Mar. Sci. 58: 331-341.

DFO. 2001. Newfoundland and Labrador Atlantic salmon stock status for 2000. DFO Science Stock Status Report D2-2001 (2001).

2002. Newfoundland and Labrador Atlantic salmon stock status for 2001. DFO Science. Stock Status Report D2-01 (2002).

Sci. Stock Status Update D2-02 (2002).

2003. Newfoundland and Labrador Atlantic salmon 2003 stock status update. DFO Can. Sci. Advis. Sec. Stock Status Update Report 2003/048.

2004. Newfoundland and Labrador Atlantic salmon 2004 stock status update. DFO Can.Sci. Advis. Sec. Stock Status Update 2004/040.

2005. Assessment of Newfoundland and Labrador Atlantic salmon. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2005/052.

May, A.W. 1993. A review of management and allocation of the Atlantic salmon resource in Atlantic Canada. p. 220-232. *In*: Mills, D. [ed.] Salmon in the sea and new enhancement strategies. Fishing News Books. 424 pp.

Mullins, C.C., Bourgeois, C.E., and Porter, T.R. 2003. Opening up new habitat: Atlantic salmon (*Salmo salar* L.) enhancement in Newfoundland. p. 200-221. *In*: Mills, D. [ed.] Salmon at the edge. Fishing News Books. 307 pp.

Mullins, C.C., and Caines, D.. MS 1994. The status of Atlantic salmon stocks in the Gulf of St. Lawrence, western Newfoundland and southern Labrador, 1993. DFO Atlantic Fisheries Res. Doc. 94/83.

O'Connell, M.F., and Bourgeois, C.E. 1987. Atlantic salmon enhancement in the Exploits River, Newfoundland, 1957-84. N. Am. J. Fish. Mgmt. 7: 207-214.

O'Connell, M.F., Davis J.P., and Scott, D.C. 1983. An assessment of the stocking of Atlantic salmon (*Salmo salar* L.) fry in the tributaries of the Middle Exploits River, Newfoundland. Can. Tech. Rep. Fish. Aquat. Sci. 1225: v + 142 p.

O'Connell, M.F., Dempson, J.B., and Chaput, G. 2006. Aspects of the life history, biology, and population dynamics of Atlantic salmon (*Salmo salar* L.) in eastern Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2006/104.

O'Connell, M.F., Dempson, J.B., Mullins, C.C. Reddin, D.G., Cochrane, N.M., and Caines, D. 1998. Status of Atlantic salmon (*Salmo salar*, L.) stocks of insular Newfoundland (SFAs 3-14A), 1997. DFO Can. Stock Assess. Res. Doc. 98/107.

O'Connell, M.F., Dempson, J.B., Mullins, C.C., Reddin, D.G., Bourgeois, C.E., Porter, T.R., Cochrane, N.M., and Caines, D. 2005. Status of Atlantic salmon (*Salmo salar*, L.) stocks of the Newfoundland Region, 2004. DFO Can. Sci. Advis. Sec. Res. Doc. 2005/064.

O'Connell, M.F., Dempson, J.B,. Porter, T.R., Reddin, D.G., Ash, E.G.M., and Cochrane, N.M. 1992b. Status of Atlantic salmon (*Salmo salar* L.) stocks of the Newfoundland Region, 1991. CAFSAC Res. Doc. 92/22.

O'Connell, M. F., Dempson, J.B., and Reddin, D.G. 1992a. Evaluation of the impacts of major management changes in the Atlantic salmon (*Salmo salar* L.) fisheries of Newfoundland and Labrador, Canada, 1984-88. ICES J. Mar. Sci. 49: 69-87.

O'Connell, M.F., Walsh, A., and Cochrane, N.M. 2000. Status of Atlantic salmon (*Salmo salar* L.) in Indian Bay Brook, Middle Brook, and Terra Nova River (SFA 5), Northeast Brook, Trepassey (SFA 9), and Northeast River, Placentia (SFA 10), Newfoundland, in 1999. DFO Can. Stock Assess. Res. Doc. 2000/041.

Table 1. Opening and closure dates of the Atlantic salmon recreational fishery for each SFA, and variations by river, 2005.

River	Class	Close dates	Reason for closure
SFA 3 June 15 - September 7			
Western Brook (Hare Bay)	III	July 11 - August 10	Low water levels & high water temperatures
Salmon River (Hare Bay)	II	July 11 - 14, July 22 - 27	"
Easter Brook	III	July 11 - August 10	"
Northeast Brook	III	July 11 - August 10	"
Western Brook (Beaver Brook)	III	July 11 - July 27	"
Northwest Brook	III	July 11 - August 10	"
Cloud River	III	July 11 - July 18	"
Souflett's River	III	July 7 - July 13	"
Little Harbour Deep River	III	July 7 - July 13	"
Coney Arm River	III	July 7 - July 13	"
Main River (Sops Arm)	II	July 7 - July 11	"
Hampden River	III	July 7 - July 17	"
Wild Cove Brook	III	July 7 - July 17	"
Western Arm Brook	III	July 7 - July 17	"
Middle Arm Brook	III	July 7 - July 17	"
Southern Arm Brook	III	July 7 - July 17	"
Baie Verte River	III	July 7 - July 17	"
Woodstock Brook	III	July 7 - July 17	"
SFA 4 June 15 - September 7			
Burlington River	III	July 7 - July 17	Low water levels & high water temperatures
Indian River	II	July 7 - July 17	"
West River	III	July 7 - July 17	"
South Brook	III	July 7 - July 17	"
Tommy's Arm River	III	July 7 - July 17	"
Northwest Arm Brook	III	July 7 - July 17	"
Western Arm Brook	III	July 7 - July 17	"
Leamington River	III	July 7 - July 17	"
Charles Brook	III	July 7 - July 17	"
Northern Arm River	III	July 7 - July 17	"
Peters River	III	July 7 - July 17	"
Exploits River (tributaries)	III	July 7 - July 17	"
Rattling Brook (downstream from powerhouse)	III	July 7 - July 17	"
Campbellton River	II	July 7 - July 17	"
Dog Bay River	III	July 7 - July 17	"
Gander River (tributaries)	II	July 7 - July 17	"
Ragged Hr. River	III	July 7 - July 17	"
Anchor Brook	II	July 7 - July 17	"
Deadman's Bay River	II	July 7 - July 17	"
Windmill Brook	III	July 7 - July 17	"
SFA 5 June 15 - September 7			
SFA 6 June 15 - September 7			
SFA 7 June 15 - September 7			
SFA 8 June 15 - September 7			
SFA 9 June 6 - September 7			
SFA 10 June 6 - September 7			

Cont'd.

Table 1 (cont'd)

River	Class	Close dates	Reason for closure
SFA 11 June 6 - September 7			
Conne River - opened June 21	III	June 24 - end of season	Environmental conditions
SFA 12 June 6 - September 7			
SFA 13 June 1 - September 7			
Highlands River	III	July 6 - July 12	Low water levels & high water temperatures
Crabbes River	III	July 6 - July 12	"
Barachois River	IV	July 6 - July 12	"
Robinsons River	III	July 6 - July 12	"
Fischell's River	IV	July 6 - July 12	"
Little Barachois River	III	July 6 - July 12	"
Southwest & Bottom Brooks	III	July 6 - July 12	"
Goose Arm River	III	July 22 - July 26	"
SFA 14A June 15 - September 7			
Lomond River	II	July 22 - July 26	Low water levels & high water temperatures
Torrent River	II	July 22 - July 26	"
Big East River	III	July 21 - July 26	"
Castors River	II	July 11 - 14, July 21 - 27	"
St. Genevieve River	II	July 11 - July 27	"
East River (St. Barbe)	III	July 11 - August 10	"
Big Brook	III	July 11 - July 27	"
Watson's Brook	III	July 11 - July 27	"
Parkers Brook	III	July 11 - July 26	"
Bartlett's Brook	III	July 11 - July 28	"
Upper Brook	III	July 11 - July 27	"
East River	III	July 11 - July 27	"
Pincents Brook	III	July 11 - July 27	"
SFA 14B June 15 - September 15			
SFA 1 June 15 - September 15			
SFA 2 June 15 - September 15			

Table 2. Atlantic salmon smolt-to-adult survival (back to the river) for Campbellton River (SFA 4), Northeast Brook, Trepassey, and Rocky River (SFA 9), Conne River (SFA 11), Highlands River (SFA 13), and Western Arm Brook (SFA 14A). Repeat spawners are included in counts. Adjusted smolt counts for Rocky River are bold.

Year (i)	Campbellton River			Northeast Brook			Rocky River			Conne River[1]			Highlands River			Western Arm Brook		
	Smolts year i	Sm. sal. year i + 1	% Surv.	Smolts year i	Sm. sal. year i + 1	% Surv.	Smolts year i	Sm. sal. year i + 1	% Surv.	Smolts year i	Sm. sal. year i + 1	% Surv.	Smolts year i	Sm. sal. year i + 1	% Surv.	Smolts year i	Sm. sal. year i + 1	% Surv.
1971																5735	406	7.1
1972																11905	797	6.7
1973																8484	506	6.0
1974																11854	639	5.4
1975																9600	552	5.8
1976																6232	373	6.0
1977																9899	315	3.2
1978																13071	1578	12.1
1979																8349	465	5.6
1980													15028	127	0.8	15665	492	3.1
1981													15839	100	0.6	13981	467	3.3
1982																12477	1141	9.1
1983																10552	235	2.2
1984																20653	467	2.3
1985																13417	527	3.9
1986				1117	91	8.1										17719	437	2.5
1987				1404	97	6.9				74585	7627	10.2				17029	422	2.5
1988				1692	62	3.7				65692	4968	7.6				15321	455	3.0
1989				1708	71	4.2				73724	5368	7.3				11407	444	3.9
1990				1902	99	5.2	8287	211	2.5	56943	2411	4.2				10563	233	2.2
1991				1911	49	2.6	7732	237	3.1	74645	2523	3.4				13453	480	3.6
1992				1674	79	4.7	7813	292	3.7	68208	2703	4.0				15405	947	6.1
1993	31577	2857	9.0	1849	99	5.4	5115	158	3.1	55765	1533	2.7	9986	145	1.5	13435	954	7.1
1994	41663	3035	7.3	944	80	8.5	9781	385	3.9	60762	3502	5.8	10503	172	1.6	9283	823	8.9
1995	39715	3208	8.1	792	73	9.2	7577	356	4.7	57733 *	4154	7.2	12160	199	1.6	15144	1230	8.1
1996	58369	1975	3.4	1749	50	2.9	**14261**	435	3.1	94088	3200	3.4	12383	398	3.2	14502	509	3.5
1997	62050	3275	5.3	1829	91	5.0	**16900**	423	2.5	100983	2931	2.9	6776	96	1.4	23845	1718	7.2
1998	50441	3076	6.1	1727	95	5.5	**12163**	327	2.7	69841	2358	3.4	5922	146	2.5	17139	1046	6.1
1999	47256	1798	3.8	1419	83	5.8	**8625**	277	3.2	63658	5177	8.1	9634	58	0.6	13500	1492	11.1
2000	35596	2151	6.0	1740	56	3.2	**7616**	233	3.1	60777	1503	2.5	13120	75	0.6	12706	563	4.4
2001	37170	1974	5.3	916	65	7.1	**9392**	276	2.9	86898	2573	3.0				16013	1465	9.1
2002	32630	2219	6.8	2076	115	5.5	**10144**	402	4.0	81806	1953	2.4				14999	1406	9.4
2003	35089	2726	7.8	1064	70	6.6	**4440**	169	3.8	71479	3818	5.3				12086	1151	9.5
2004	32780	3746	11.4	1571	69	4.4	13047	427	3.3	79667	1978	2.5				17323	1019	5.9
2005	30123			1384			15847			66196						8607		

[1]Includes Native food fishery.

* 57733 excludes 5016 removed to Roti Bay.

4154 small salmon for Conne River 1996 excludes 286 fish from the wild smolt aquaculture experiment.

Table 3. Counts of small salmon to rivers in insular Newfoundland 1974-2005 by Salmon Fishing Area (SFA). Also shown are means, 95% confidence intervals, and percentage change for 2005 in relation to 1984-1991, 1992-1996, and 1997-2004 means. Partial counts are in parentheses and are not included in statistical calculations. Adjusted counts are bold.

	SFA 4			SFA 5			SFA 9		SFA 10	SFA 11		SFA 13								
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1974	2538		857	(770)					223											41
1975	9218			(1119)					(186)											1
1976	3991								294											132
1977	6148																			152
1978	3790		755	1403	810				390											117
1979	6715		(404)	(1350)	569				454											195
1980			997	1712	843				433			82								301
1981	(8114)		2459	2414	1115				334			127								110
1982	(7605)		1425	1281	983				86			100								275
1983			978	1195	1210				233											220
1984	17219		1081	1379	1233		69		419											440
1985	16852		1683	904	1557		124		384											190
1986	9667		1084	1036	1051		158		725		7515									354
1987	9014		493	914	974		91	80	325	64	9687									355
1988	8974		1562	772	1737		97	313	543	65	7118									437
1989	7192		586	496	1138		62	198	706	102	4469									
1990	6629		**345**	745	1149		71	401	551	158	4321									
1991	5245		245	562	873		99	211	353	55	2086									
1992	12538		1168	1182	1443		49	237	921	104	1973							222		435
1993	21319	4001	1560	1959	(2713)		79	292	847	189	2355	137						576		526
1994	16168	2857	968	1513	1571		99	158	677	73	1533	145						582		701
1995	15691	3035	1600	1139	2258	442	80	385	663	118	3498	172						753		1003
1996	29726	3208	946	1751	2005	593	73	386	1225	674	4436	199	**844**	**805**	**768**		**1051**	601		601
1997	13552	1975	465	1221	1577	(408)	50	435	641	399	2678	398	**1121**	**1044**	**1017**	**599**	**1282**	613		783
1998	26333	3275	1295	2405	1780	540	91	423	756	264	2931	96	**482**			**194**		593		542
1999	28252	3076	1105	1902	1836	314	95	327	336	307	2357	146	**709**	**560**	**1399**	**1264**	**2237**	808		829
2000	11817	1798	742	1660		272	83	277	520	564	4708	58	**1024**	**1142**	**1253**	**1800**	**2134**	441		658
2001	18978	2151	663	1188	2151	102	56	233	**265**	125	1359	75	**683**	**934**	**1776**	**214**	**952**	200		333
2002	15147	1974	714	823	1374	441	65	276	414	467	2352	169	**814**	**515**	**758**	**399**	**1373**	593		522
2003	28626	2219	722	1105	2225	999	115	402		322	1867	294	**1099**	**733**	**1066**	**1046**	**1425**	351	2334	589
2004	26678	2726	983	1370	2945	1157	70	169		656	3641	507	**2128**	**1078**	**1811**	**1254**	**1919**	202	**2828**	551
2005	27419	3746	940	1421	2322	1106	**69**	427		216	1952	101	**944**	**590**	**1114**	**1387**	**2356**		2495	
$\bar{X}$ 1984-1991	10078		881	851	1214		99	235	501	89	5866									355
95% CI	3743		455	234	245		25	155	130	53	2875									85
N	8		8	8	8		8	5	8	5	8									8
$\bar{X}$ 1992-1996	19088	3275	1248	1509	1819	518	76	286	867	228	2750	103						543		653
95% CI	8354	803	391	441	602	959	22	114	284	313	1474	45						242		271
N	5	4	5	5	4	2	5	5	5	5	5	4						5		5
$\bar{X}$ 1997-2004	21173	2399	836	1447	1984	546	78	316	489	391	2737	218	982	858	1303	906	1617	461		601
95% CI	5807	463	225	414	479	361	18	80	196	144	876	138	435	214	329	487	403	137		131
N	8	8	8	8	7	7	8	8	6	8	8	8	8	8	8	8	8	8		8
% change 2005 vs:																				
2004	3	37	-4	4	-21	3	-1	153		-67	-46	-80	-80	-45	-38	11	23		-12	
1984-1991 mean	172		7	67	91		-30	82		143	-67									
1992-1996 mean	44	14	-25	-6	28	131	-9	50		-5	-29	-38								
1997-2004 mean	30	56	12	-2	17	119	-12	34		-45	-29	-54	-14	-31	-14	53	46			

1. Exploits River (Bishop's Falls)
2. Campbellton River
3. Salmon Brook
4. Middle Brook
5. Terra Nova River (Lower)
6. Northwest River, Port Blandford
7. Northeast Brook, Trepassey
8. Rocky River
9. Northeast River, Placentia
10. Little River
11. Conne River
12. Highlands River
13. Crabbes River
14. M. Barachois River
15. Robinsons River
16. Fischells River
17. Flat Bay Brook
18. Pinchgut Brook
19. Harry's River (Lower)
20. Lomond River
21. Torrent River
22. Western Arm Brook

Table 4. Counts of large salmon to rivers in insular Newfoundland 1974-2005 by Salmon Fishing Area (SFA). Also shown are means, 95% confidence intervals, and percentage change for 2005 in relation and the 1984-1991, 1992-1996, and 1997-2004 means. Partial counts are in parentheses and are not included in statistical calculations. Adjusted counts are bold.

	SFA 4			SFA 5			SFA 9		SFA 10	SFA 11		SFA 13								SFA 14A	
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1974	411		9	(77)					9											33	3
1975	1439			(9)					(36)											0	25
1976	460								56											11	47
1977	581																			11	33
1978	303		52	16	20				32											12	21
1979	277		(6)	(54)	170				37											1	39
1980			15	91	39				34			55								19	63
1981	(1695)		33	39	90				62			29								50	97
1982	(181)		18	20	19				36			56								16	523
1983			12	75	57				22											7	442
1984	529		38	57	107		33		44											47	288
1985	183		26	27	112		41		0											14	30
1986	355		12	15	140		30		39		397									32	92
1987	310		9	19	56		30	1	16	3	498									11	68
1988	147		24	14	206		19	6	11	3	418									21	44
1989	89		24	19	142		18	9	15	5	319										60
1990	122		8	13	144		9	17	25	15	361										82
1991	99		2	14	114		13	16	8	6	87										71
1992	314		101	43	270		10	46	46	21	154							5		80	169
1993	627	145	87	87	(470)		17	72	65	11	98	78						43		34	222
1994	916	191	83	90	242		15	19	70	11	100	148						47		50	331
1995	941	218	125	168	634	135	12	39	74	17	107	120						28		95	611
1996	2053	560	112	161	464	203	15	45	123	127	179	142	**239**	**36**	**120**		**112**	38		93	507
1997	886	321	119	262	527	(115)	9	89	185	79	182	157	**346**	**182**	**172**	**73**	**167**	68		72	666
1998	1953	402	141	196	390	104	11	130	287	49	294	117	**234**			**72**		63		126	757
1999	2235	493	138	130	343	93	18	77	167	49	241	82	**263**	**66**	**200**	**246**	**231**	63		113	399
2000	683	208	61	189		106	14	104	258	52	216	67	**152**	**155**	**316**	**276**	**466**	15		81	587
2001	1346	119	93	62	330	50	8	60	**65**	35	140	65	**176**	**141**	**219**	**44**	**173**	3		72	437
2002	889	123	95	69	271	113	2	78	40	41	167	87	**129**	**160**	**198**	**42**	**195**	23		62	421
2003	1335	152	139	74	329	273	11	73		13	51	166	**260**	**101**	**173**	**180**	**187**	20	422	77	330
2004	948	161	72	88	397	253	11	235		31	175	252	**268**	**96**	**159**	**190**	**183**	15	**498**	96	536
2005	1965	276	138	62	313	305	**5**	95		15	105	153	**306**	**97**	**98**	**167**	**299**		453		771
$\bar{x}$ 1984-1991	229		18	22	128		24	10	20	6	347									25	92
95% CI	130		10	12	36		9	8	13	6	148									12	68
N	8		8	8	8		8	5	8	5	6									8	8
$\bar{x}$ 1992-1996	970	279	102	110	403	169	14	44	76	37	128	122						32		70	368
95% CI	815	302	22	66	291	432	3	24	35	62	46	50						21		34	233
N	5	4	5	5	4	2	5	5	5	5	5	4						5		5	5
$\bar{x}$ 1997-2004	1284	247	107	134	370	142	11	106	167	44	183	124	229	129	205	143	229	34		87	517
95% CI	463	118	26	62	75	79	4	47	104	16	60	54	60	35	44	79	89	22		19	122
N	8	8	8	8	7	7	8	8	6	8	8	8	8	8	8	8	8	8		8	8
% change 2005 vs. 2004	107	71	92	-30	-21	21	-55	-60		-52	-40	-39	14	1	-38	-12	63		-9		44
1984-1991 mean	757		672	179	145		-79	869		134	-70										739
1992-1996 mean	103	-1	36	-44	-22	80	-64	115		-60	-18	25									110
1997-2004 mean	53	12	29	-54	-15	115	-52	-10		-66	-43	23	34	-25	-52	17	31				49

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Table 5. Total returns of small salmon to rivers in insular Newfoundland 1984-2005 by Salmon Fishing Area (SFA). Also shown are means and 95% confidence intervals for 1984-1991, 1992-1996, and 1997-2004.

	SFA 4			SFA 5			SFA 9		SFA 10	SFA 11		SFA 13							SFA 14A		
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1984	19028			1675	1534		89		459										986	1805	235
1985	17555			1283	2012		124		519										393	1621	470
1986	10343			1547	1459		158		879		8302								725	3155	528
1987	9481			1053	1404		91	80	350	64	10155								652	2647	437
1988	9496			1337	2114		97	313	637	65	7627								841	2388	422
1989	7577		7743	626	1377		62	168	809	102	4968								652	1510	455
1990	6995		7740	1070	1518		71	401	699	158	5368								777	2518	444
1991	5659		6745	763	1127		99	211	368	55	2411								731	1590	233
1992	13508		18179	1563	1780		49	237	956	104	2523							888	794	2829	480
1993	22253	4001	26205	2247	3050		79	292	980	169	2703	137						1808	816	4215	947
1994	17603	2857	18494	1751	1809		99	158	737	73	1533	145						1791	1292	3737	954
1995	16226	3035	22432	1390	2515	498	80	385	811	118	3502	172						2213	1529	6346	823
1996	30425	3208	24191	2044	2251	593	73	356	1532	674	4440	199	870	818	882		1233	1798	1242	7475	1230
1997	15263	1975	10637	1352	1732	466	50	435	749	399	3200	398	1168	1056	1107	863	1320	1747	1468	4158	509
1998	27093	3275	19060	2625	1868	540	91	423	1075	264	2931	96	494			205		1659	787	5388	1718
1999	28802	3076	18742	1948	1892	314	95	327	401	307	2358	146	717	563	1452	1264	2276	1713	1212	4857	1046
2000	12063	1798	14074	1749	1629	272	83	277	622	564	5177	58	1027	1142	1501	1800	2397	1271	1072	4154	1492
2001	19370	2151	12517	1525	2261	102	56	233	313	125	1503	75	688	937	1909	248	1150	1028	572	2637	563
2002	15589	1974	13444	916	1435	443	65	276	534	487	2573	169	627	569	909	414	1612	1640	815	4861	1465
2003	29198	2219	13657	1183	2271	1012	115	402		322	1953	294	1104	743	1211	1071	1540	2334	840	3955	1406
2004	27195	2726	18521	1520	3006	1207	70	169		656	3818	507	2149	1087	1989	1254	2004	2828	836	5110	1151
2005	27912	3746	17828	1516	2372	1210	69	427		216	1978	101	874	592	1211	1389	2485	2495		4065	1019
$\bar{X}$ 1984-1991	10767		7409	1169	1568		99	235	590	89	6472								720	2154	403
95% CI	4100		1429	304	277		25	155	166	53	2902								143	507	91
N	8		3	8	8		8	5	8	5	6								8	8	8
$\bar{X}$ 1992-1996	20003	3275	21900	1799	2281	546	76	286	1003	228	2940	163						1700	1135	4920	887
95% CI	8232	803	4368	433	657	604	22	114	388	313	1356	45						606	397	2390	337
N	5	4	5	5	5	2	5	5	5	5	5	4						5	5	5	5
$\bar{X}$ 1997-2004	21822	2399	15082	1602	2012	545	78	318	616	391	2939	218	997	871	1440	890	1757	1778	950	4390	1169
95% CI	5852	463	2702	437	413	316	18	80	287	144	967	138	439	205	336	473	399	476	237	729	370
N	8	8	8	8	8	8	8	8	6	8	8	8	8	8	8	8	8	8	8	8	8

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Table 6. Total returns of large salmon to rivers in insular Newfoundland 1984-2005 by Salmon Fishing Area (SFA). Also shown are means and 95% confidence intervals for 1984-1991, 1992-1996, and 1997-2004.

	SFA 4			SFA 5			SFA 9		SFA 10	SFA 11		SFA 13							SFA 14A		
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1984	529			57	107		33		44										75	288	0
1985	183			27	112		41		0										14	30	1
1986	355			15	140		30		39		412								37	93	0
1987	310			19	56		30	1	16	3	516								12	68	1
1988	147			14	206		19	6	11	3	420								24	44	1
1989	89		473	19	142		18	9	15	5	320								22	60	0
1990	122		508	13	144		9	17	25	15	372								19	82	0
1991	99		670	14	114		13	16	8	6	89								21	71	1
1992	314		4162	43	270		10	46	46	21	159							16	86	170	8
1993	627	145	1734	88	472		17	72	65	11	100	78						115	38	224	8
1994	916	191	1072	91	243		15	19	70	11	100	148						128	64	334	31
1995	945	218	1121	169	637	135	12	39	74	17	110	120						80	103	617	33
1996	2057	560	1753	161	467	203	15	45	123	127	179	142	249	38	138		132	126	101	517	50
1997	881	321	1883	262	528	182	9	89	185	79	185	157	361	189	195	89	174	201	78	676	55
1998	1959	402	3649	196	394	104	11	130	287	49	294	117	239			72		191	128	761	128
1999	2236	493	4815	130	344	93	18	77	167	49	241	82	265	66	204	246	235	176	120	421	22
2000	684	208	1942	190	232	106	14	104	258	52	216	67	156	155	320	276	494	49	90	596	120
2001	1347	119	1682	62	330	50	8	60	65	36	140	65	180	142	232	45	176	132	75	443	28
2002	890	123	1898	69	271	114	2	78	40	41	167	87	134	164	201	42	198	285	66	432	48
2003	1336	152	1853	74	330	273	11	73		13	51	166	265	107	188	180	193	422	83	341	23
2004	949	161	2668	88	397	265	11	235		31	175	252	275	100	164	190	184	498	99	549	74
2005	1966	276	2461	62	313	305	5	95		15	105	153	308	97	102	168	303	453		777	43
$\bar{X}$ 1984-1991	229		550	22	128		24	10	20	6	355								28	92	1
95% CI	130		261	12	36		9	8	13	6	153								17	68	0
N	8		3	8	8		8	5	8	5	6								8	8	8
$\bar{X}$ 1992-1996	972	279	1968	110	418	169	14	44	76	37	130	122						93	78	372	26
95% CI	817	302	1575	66	202	432	3	24	35	62	46	50						59	34	237	22
N	5	4	5	5	5	2	5	5	5	5	5	4						5	5	5	5
$\bar{X}$ 1997-2004	1285	247	2549	134	353	148	11	106	167	44	184	124	234	132	215	143	236	244	92	527	62
95% CI	464	118	939	62	75	69	4	47	104	16	60	54	62	36	42	77	97	126	18	120	35
N	8	8	8	8	8	8	8	8	6	8	8	8	8	8	8	8	8	8	8	8	8

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Table 7. Percentage change in total returns of small salmon in 2005 in relation to 2004, the 1984-1991, 1992-1996 and 1997-2004 means.

Counting Facility	Total Returns Small Salmon 2005*	Percent Change from			
		2004	1984-1991 mean	1992-1996 mean	1997-2004 mean
SFA 4					
Exploits River	27912	3	159	40	28
Campbellton River	3746	37		14	56
Gander River	17828	-4	141	-19	18
SFA 5					
Middle Brook	1516	0	30	-16	-5
Terra Nova River (Lower)	2372	-21	51	4	18
Northwest River (TNNP)	1210	0		122	122
SFA 9					
Northeast Bk. (Trep.)	69	-1	-30	-9	-12
Rocky River	427	153	82	50	34
SFA 11					
Little River	216	-67	143	-5	-45
Conne River	1978	-48	-69	-33	-33
SFA 13					
Highlands River	101	-80		-38	-54
Crabbes River	874	-59			-12
M. Barachois River	592	-46			-32
Robinsons River	1211	-39			-16
Fischells River	1389	11			56
Flat Bay Brook	2485	24			41
Harry's River	2495	-12		47	40
SFA 14A					
Torrent River	4065	-20	89	-17	-7
Western Arm Brook	1019	-11	153	15	-13

*preliminary

Table 8. Percentage change in total returns of large salmon in 2005 in relation to 2004, the 1984-1991, 1992-1996 and 1997-2004 means.

Counting Facility	Total Returns Large Salmon 2005*	Percent Change from			
		2004	1984-1991 mean	1992-1996 mean	1997-2004 mean
SFA 4					
Exploits River	1966	107	758	102	53
Campbellton River	276	71		-1	12
Gander River	2461	-8	347	25	-3
SFA 5					
Middle Brook	62	-30	179	-44	-54
Terra Nova River (Lower)	313	-21	145	-25	-11
Northwest River (TNNP)	305	15		80	106
SFA 9					
Northeast Bk. (Trep.)	5	-55	-79	-64	-52
Rocky River	95	-60	869	115	-10
SFA 11					
Little River	15	-52	134	-60	-66
Conne River	105	-40	-70	-19	-43
SFA 13					
Highlands River	153	-39		25	23
Crabbes River	308	12			31
M. Barachois River	97	-3			-26
Robinsons River	102	-38			-53
Fischells River	168	-12			18
Flat Bay Brook	303	65			28
Harry's River	453	-9		387	85
SFA 14A					
Torrent River	777	42	745	109	47
Western Arm Brook	43	-42	8500	65	-31

*preliminary

Table 9. Proportions of large salmon in total returns to rivers in insular Newfoundland during 1992-2005 and mean proportions for 1984-1991, 1992-1996, and 1997-2004.

	Proportion of large salmon																
River Name	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	1984-1991 mean	1992-1996 mean	1997-2004 mean
SFA 4																	
Exploits River (Bishop's Falls)	0.023	0.027	0.049	0.055	0.063	0.055	0.067	0.072	0.054	0.065	0.054	0.044	0.034	0.066	0.021	0.046	0.056
Campbellton River	-	0.035	0.063	0.067	0.149	0.140	0.109	0.138	0.104	0.052	0.059	0.064	0.056	0.069	-	0.078	0.093
Gander River	0.186	0.062	0.055	0.048	0.068	0.150	0.161	0.204	0.121	0.118	0.124	0.119	0.126	0.121	0.069	0.082	0.152
SFA 5																	
Middle Brook	0.027	0.038	0.049	0.108	0.073	0.162	0.069	0.063	0.098	0.039	0.070	0.059	0.055	0.039	0.019	0.058	0.077
Terra Nova River	0.132	0.134	0.118	0.202	0.172	0.234	0.174	0.154	0.125	0.127	0.159	0.127	0.117	0.117	0.075	0.155	0.149
Northwest River (Port Blandford)	-	-	-	0.213	0.255	0.281	0.161	0.229	0.280	0.329	0.205	0.212	0.180	0.201	-	0.237	0.214
SFA 9																	
Northeast Brook (Trepassey)	0.169	0.177	0.132	0.130	0.170	0.153	0.108	0.159	0.144	0.125	0.030	0.087	0.136	0.068	0.196	0.154	0.118
Rocky River	0.163	0.198	0.107	0.092	0.112	0.170	0.235	0.191	0.273	0.205	0.220	0.154	0.582	0.182	0.040	0.134	0.250
SFA 10																	
Northeast River (Placentia)	0.046	0.062	0.087	0.084	0.074	0.198	0.211	0.294	0.293	0.172	0.070				0.032	0.070	0.213
SFA 11																	
Little River	0.168	0.061	0.131	0.126	0.159	0.165	0.157	0.138	0.084	0.224	0.078	0.039	0.045	0.065	0.067	0.141	0.101
Conne River	0.059	0.036	0.061	0.030	0.039	0.055	0.091	0.093	0.040	0.085	0.061	0.025	0.044	0.050	0.052	0.042	0.059
SFA 13																	
Highlands River	-	0.363	0.505	0.411	0.416	0.283	0.549	0.360	0.536	0.464	0.340	0.361	0.332	0.602	-	0.428	0.363
Crabbes River	-	-	-	-	0.223	0.236	0.326	0.270	0.132	0.207	0.176	0.194	0.113	0.261	-	-	0.190
M. Barachois River	-	-	-	-	0.044	0.152	-	0.105	0.120	0.132	0.224	0.126	0.084	0.141	-	-	0.131
Robinsons River	-	-	-	-	0.135	0.150	-	0.123	0.176	0.108	0.181	0.134	0.076	0.078	-	-	0.130
Fischells River	-	-	-	-	-	0.093	0.260	0.163	0.133	0.154	0.092	0.144	0.132	0.108	-	-	0.138
Flat Bay Brook	-	-	-	-	0.097	0.116	-	0.094	0.171	0.133	0.109	0.111	0.084	0.109	-	-	0.119
Harry's River	0.018	0.060	0.067	0.035	0.065	0.103	0.103	0.093	0.037	0.114	0.148	0.153	0.150	0.154	-	0.052	0.121
SFA 14A																	
Lomond River	0.098	0.044	0.047	0.063	0.075	0.050	0.140	0.090	0.077	0.116	0.075	0.090	0.106		0.037	0.065	0.089
Torrent River	0.057	0.050	0.082	0.089	0.065	0.140	0.124	0.080	0.125	0.144	0.082	0.079	0.097	0.160	0.041	0.070	0.107
Western Arm Brook	0.016	0.008	0.031	0.039	0.039	0.098	0.069	0.021	0.074	0.047	0.032	0.016	0.060	0.040	0.001	0.028	0.051

Table 10. Summary of the conservation egg requirement achieved for various rivers for years prior to the commercial salmon fishing moratorium (1984-1991) and years during the moratorium (1992-2005) in t
shown are the means for 1984-1991,1992-1996, and 1997-2004.

		Percentage conservation level met																				
SFA	River	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
4	Exploits River	39	37	32	33	37	36	26	16	31	43	31	39	69	24	47	44	21	34	25	51	47	51
	Lower	123	100	66	62	59	46	45	34	101	157	103	121	210	72	134	116	56	91	56	141	130	95
	Middle	20	17	8	9	12	14	12	16	20	23	18	24	43	15	35	35	16	27	23	39	37	51
	Upper	29	53	72	97	125	119	88	0	2	6	7	12	26	10	6	7	2	5	3	7	2	4
	Campbellton River										311	216	264	316	180	315	312	152	148	138	191	212	324
	Gander River						44	38	36	118	128	84	89	115	61	110	121	86	84	91	96	144	111
5	Indian Bay Brook														113	183	161						
	Middle Brook	131	84	89	90	55	49	74	51	148	238	176	116	258	193	301	222	217	132	101	134	162	163
	Terra Nova River	18	23	17	14	28	19	19	15	28	53	25	44	35	31	33	33	27	36	28	42	54	42
	Northwest River (TNNP)												37	55	46	42	28	27	11	37	81	92	93
9	Biscay Bay River	156	126	230	119	117	87	122	38	141	97	143	77	117									
	Northeast Brook (Trepassey)	229	312	368	227	213	173	156	249	126	193	239	194	196	135	256	248	216	157	156	303	183	168
	Rocky River	64	29	59	22	30	17	40	22	28	34	25	56	34	56	54	39	34	33	40	50	51	55
10	Northeast River (Placentia)	204	152	352	166	247	302	269	175	555	527	430	412	766	482	489	276	449	168	243			
11	Little River				29	30	60	106	47	44	80	37	56	288	200	231	38	263	69	224	144	295	99
	Conne River - Conservation			262	394	285	185	201	93	87	110	72	147	204	125	150	122	210	67	113	81	160	91
	Management			146	219	159	103	112	51	48	61	40	82	114	70	84	68	117	37	63	45	89	51
13	Highlands River										46	77	67	79	105	59	49	34	34.8	53	99	155	75
	Crabbes River									34	13	41		68	95	53	66	63	53	43	81	123	78
	Middle Barachois Brook									53	48	74		52	95		43	95	80	61	61	79	52
	Robinsons River									57	23	65		67	91		118	135	142	82	94	132	81
	Fischells River									14	24	71			44	23	110	142	18	28	86	99	101
	Flat Bay Brook									18	14	19	45	85	89		149	167	71	97	99	126	162
	Harry's River									13	41	51	53	46	50	49	49	29	33	60	84	98	91
	Pinchgut Brook									36	117	145	150	130	140	136	138	82	36	116			
	Humber River							60	27	117	96	40	128	186	115	120	201						
14A	Trout River																		25	25			
	Lomond River	74	31	59	56	70	61	62	64	121	118	142	187	143	161	151	181	140	88	112	129	134	
	Torrent River	270	161	360	199	266	225	221	178	313	538	530	1033	1279	797	924	680	657	400	597	496	686	675
	Western Arm Brook	30	80	156	103	67	142	157	68	151	288	292	286	415	200	625	370	567	193	510	466	425	351

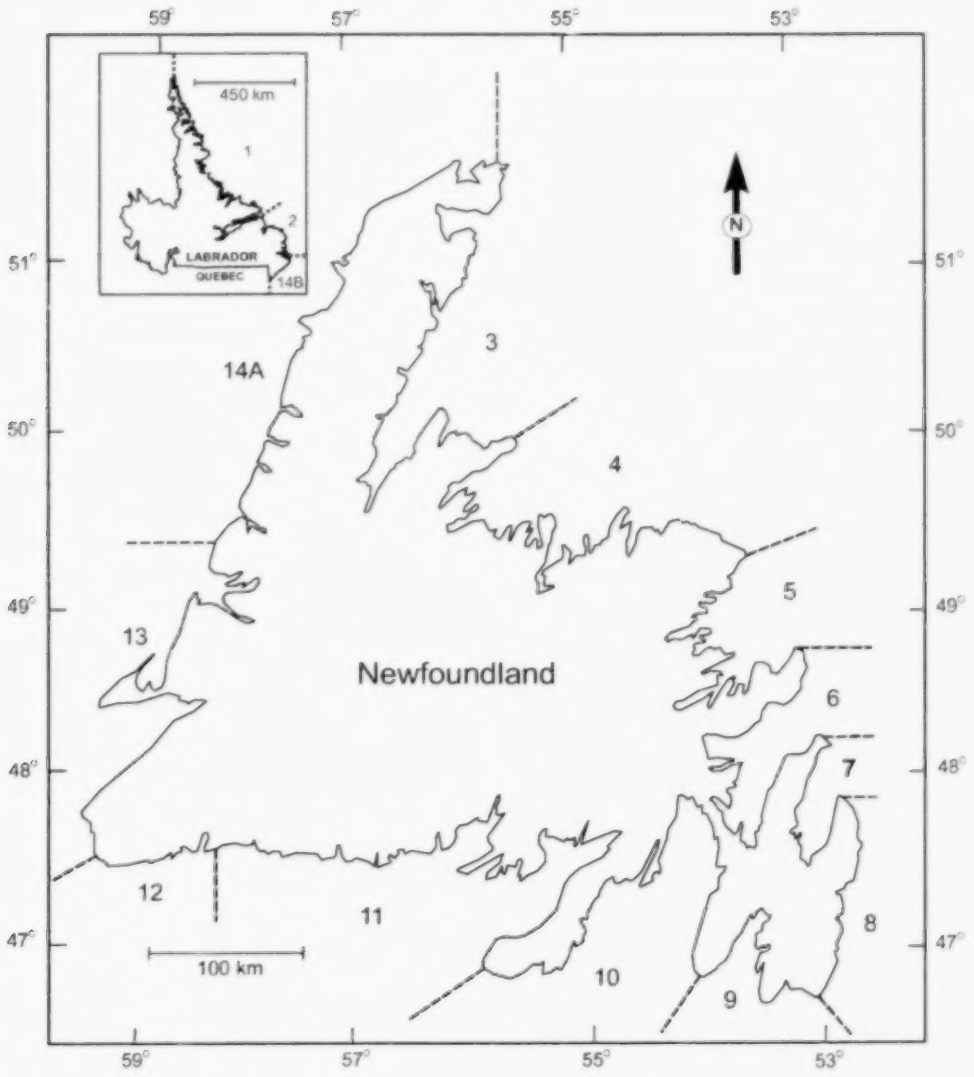

Fig. 1. Map showing the 14 Salmon Fishing Areas of the Newfoundland Region.

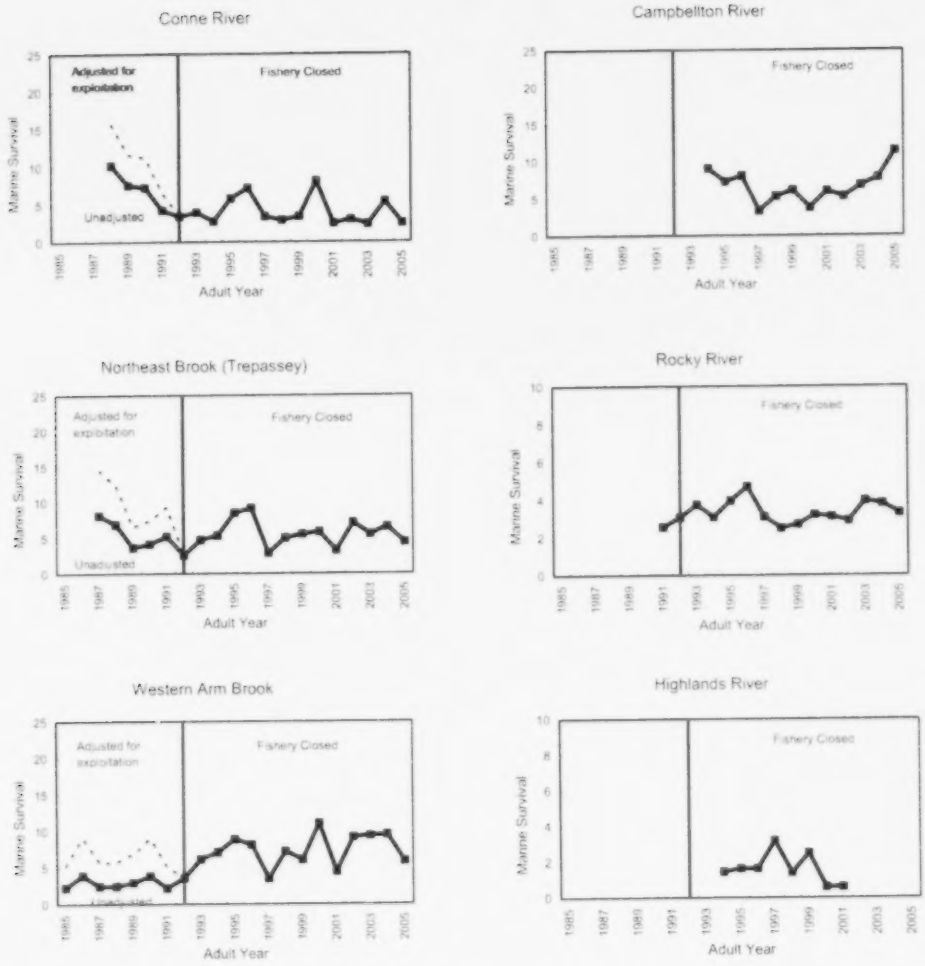

Fig. 2. Estimates of marine survival from smolts in year i to adult small salmon in year i+1. Dashed line represents marine survival adjusted for average marine exploitation rate (from Dempson et al. MS 1998).

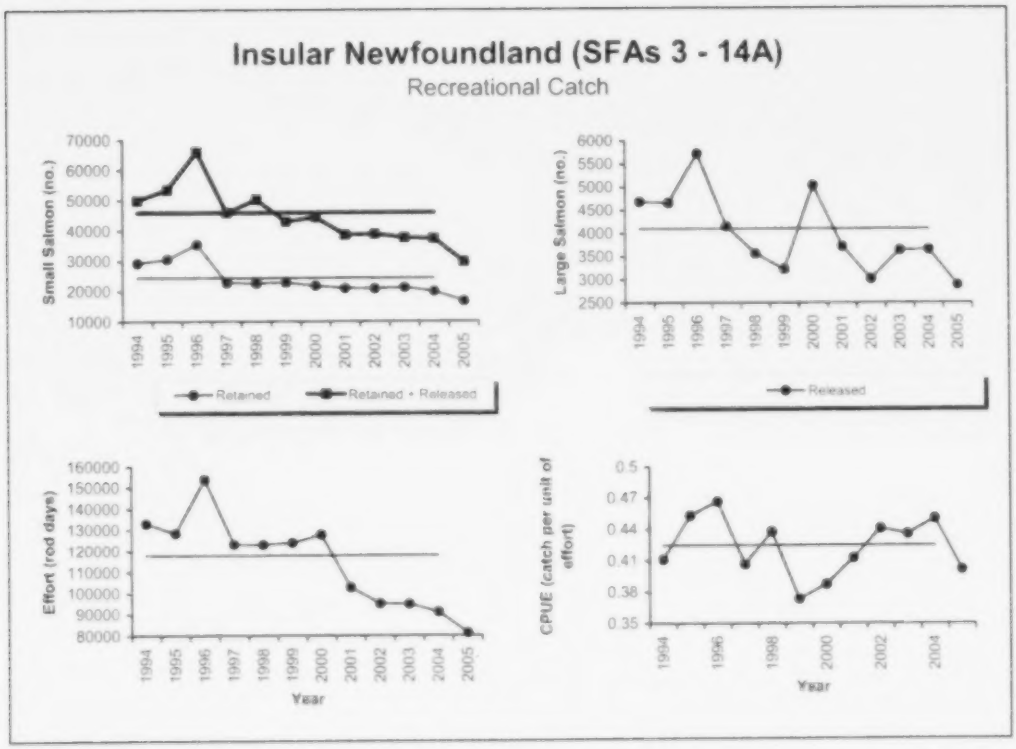

Fig. 3. Recreational catch of small salmon (retained and retained plus released), large salmon released, effort, and CPUE, 1994-2005, for Insular Newfoundland (SFAs 3-14A). The thin horizontal line represents the 1994-2004 mean for small salmon retained, large released, effort and CPUE, and the thick horizontal line the 1994-2004 mean for retained and released small salmon combined.

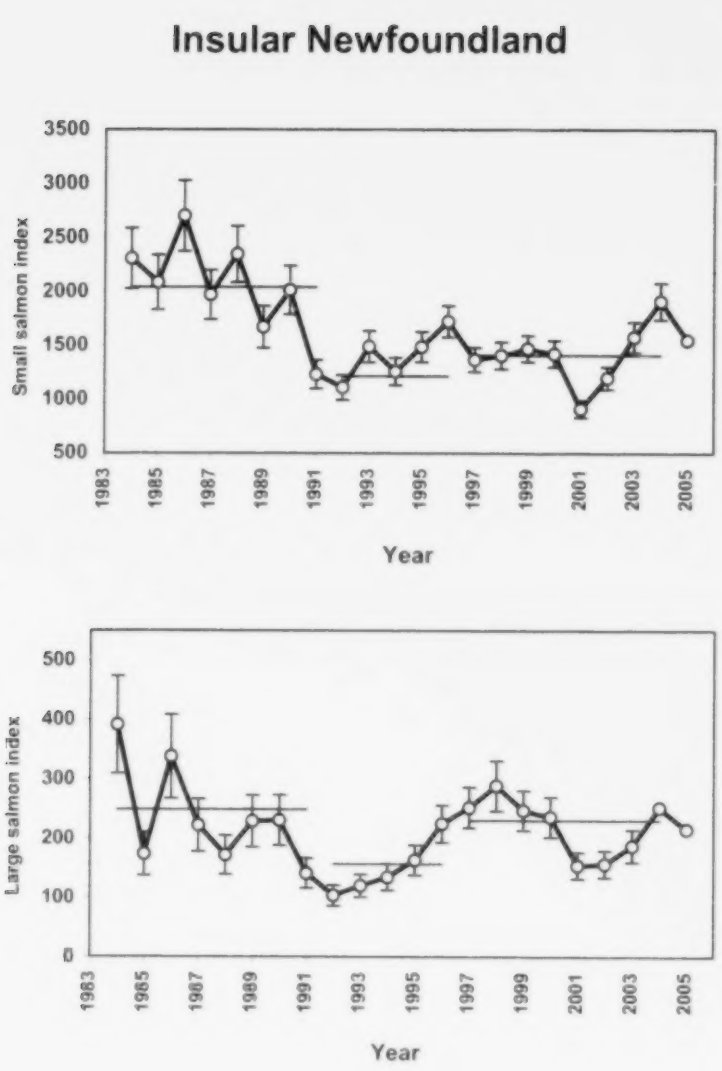

Figure 4. Trends in abundance of small (upper) and large (lower) salmon for insular Newfoundland, SFAs 3 -14A, all rivers combined, 1984 to 2005. Vertical lines represent ± 1 standard error. Horizontal lines illustrate the mean abundance index for the periods 1984-1991, 1992-1996, and 1997-2004.

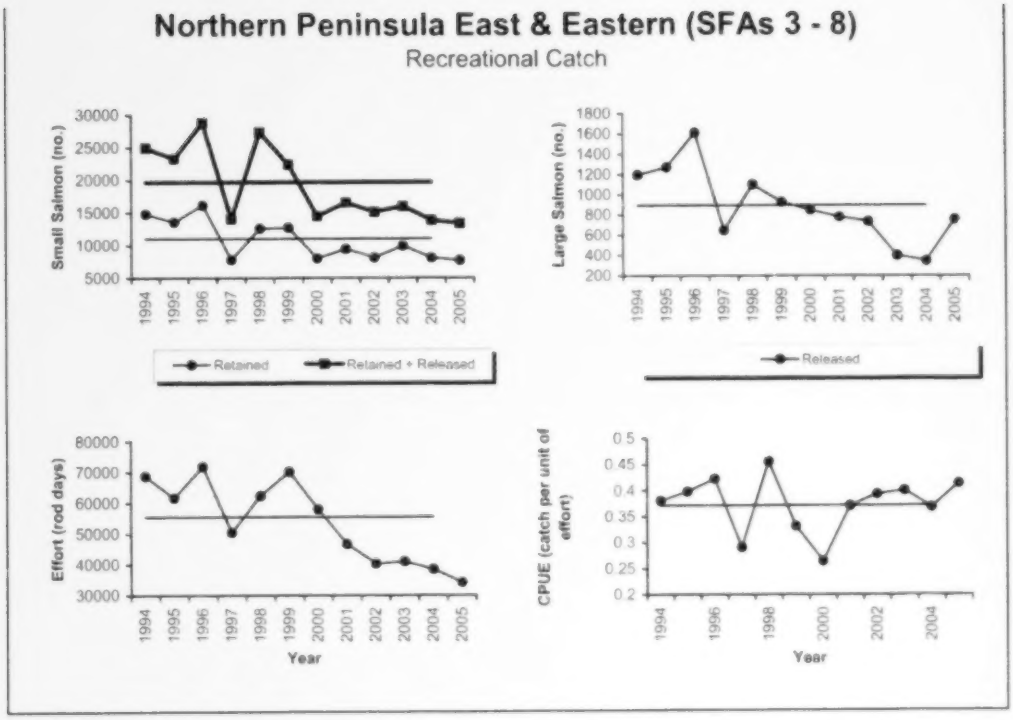

Fig. 5. Recreational catch of small salmon (retained and retained plus released), large salmon released, effort, and CPUE, 1994-2005, for Northern Peninsula East & Eastern (SFAs 3-8). The thin horizontal line represents the 1994-2004 mean for small salmon retained, large released, effort and CPUE, and the thick horizontal line the 1994-2004 mean for retained and released small salmon combined.

NORTHEAST COAST

Total Returns

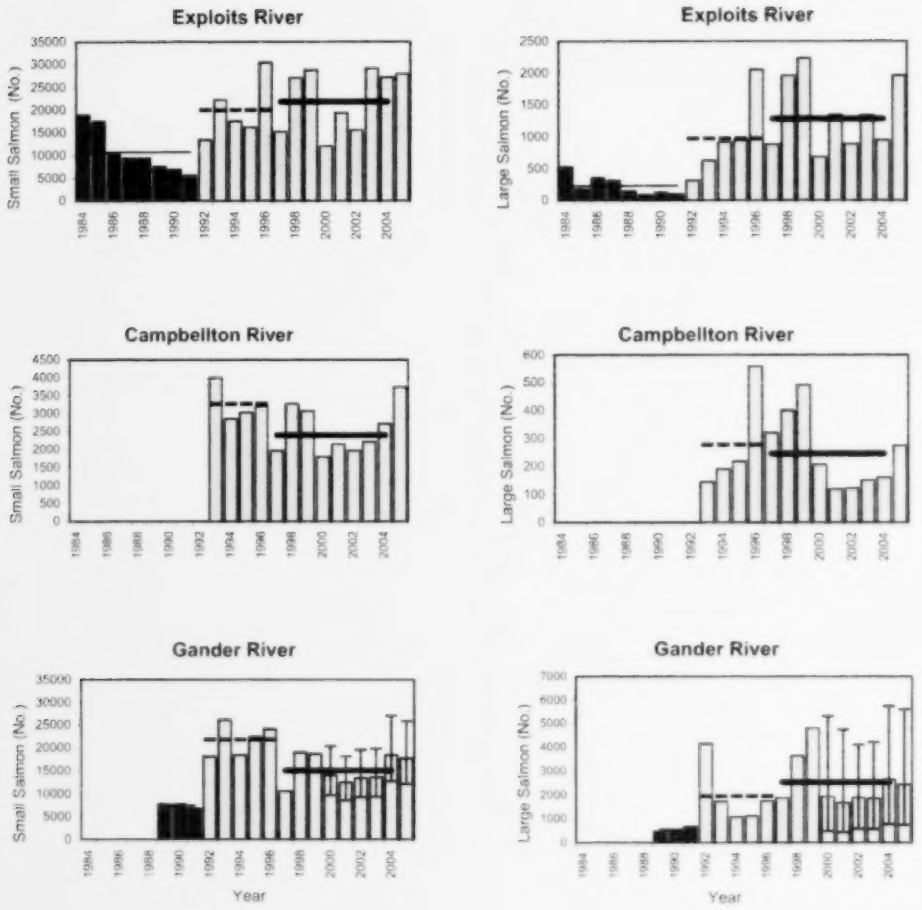

Fig. 6. Total returns of small and large salmon to Exploits River, Campbellton River and Gander River (northeast coast), 1984-2005. The thin solid horizontal line represents the 1984-1991 mean, the broken line the 1992-1996 mean, and the thick solid line the 1997-2004 mean. The dark gray bars represent the pre-moratorium years and the cross-hatched bars the moratorium years. Vertical lines are estimates of the 5th to 95th percentiles.

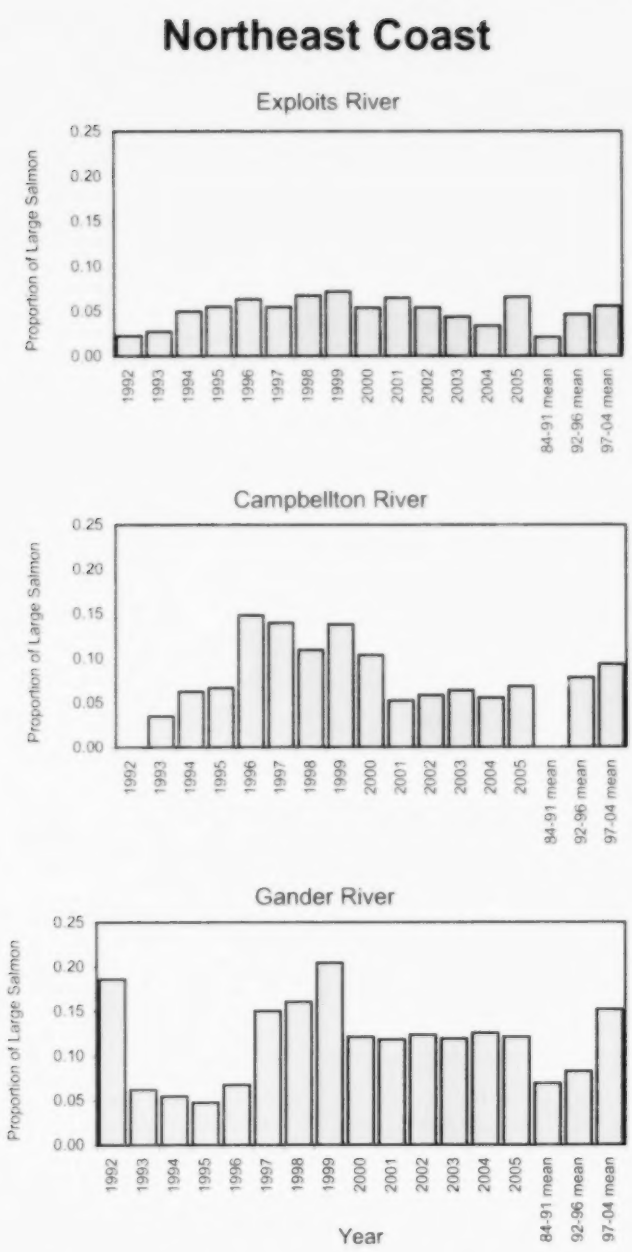

Fig. 7. Proportion of large salmon in total returns to Exploits River, Campbellton River and Gander River, (northeast coast), 1992-2005, and the 1984-1991, 1992-1996 and 1997-2004 means.

EAST COAST

Total Returns

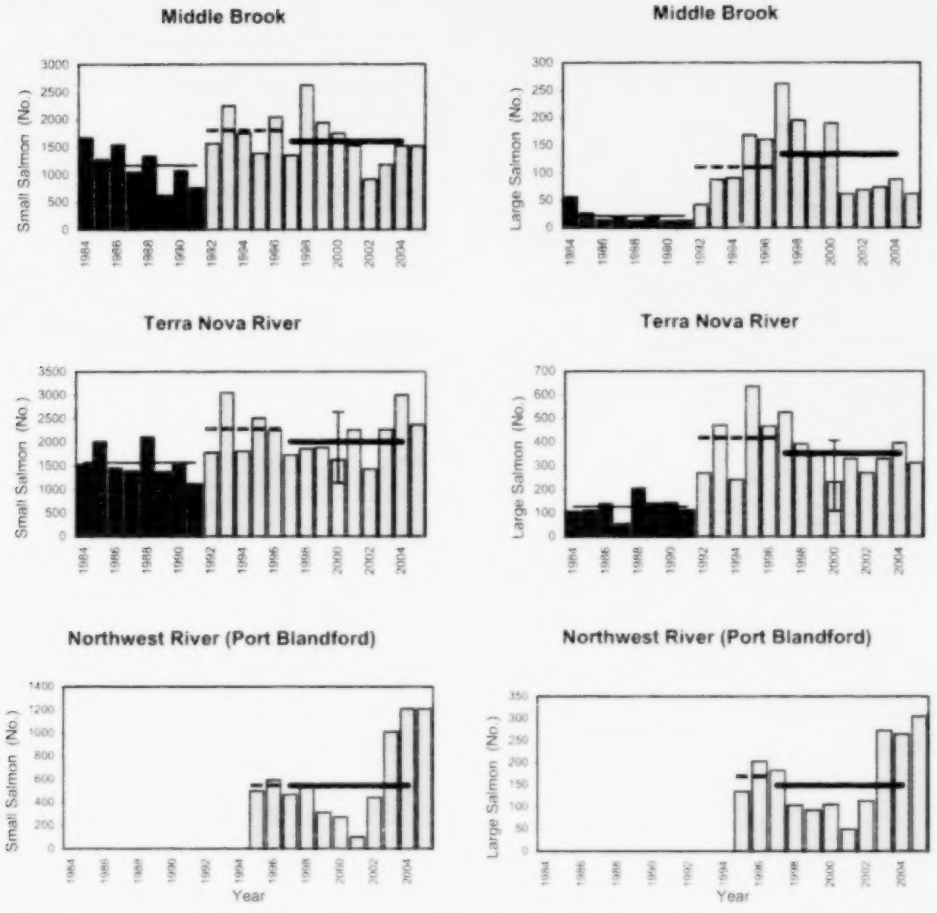

Fig. 8. Total returns of small and large salmon to Middle Brook, Terra Nova River and Northwest River, Port Blandford (east coast), 1984-2005. The thin solid horizontal line represents the 1984-1991 mean, the broken line the 1992-1996 mean, and the thick solid line the 1997-2004 mean. The dark gray bars represent the pre-moratorium years and the cross-hatched bars the moratorium years. Vertical lines are estimates of the 5th to 95th percentiles.

East Coast

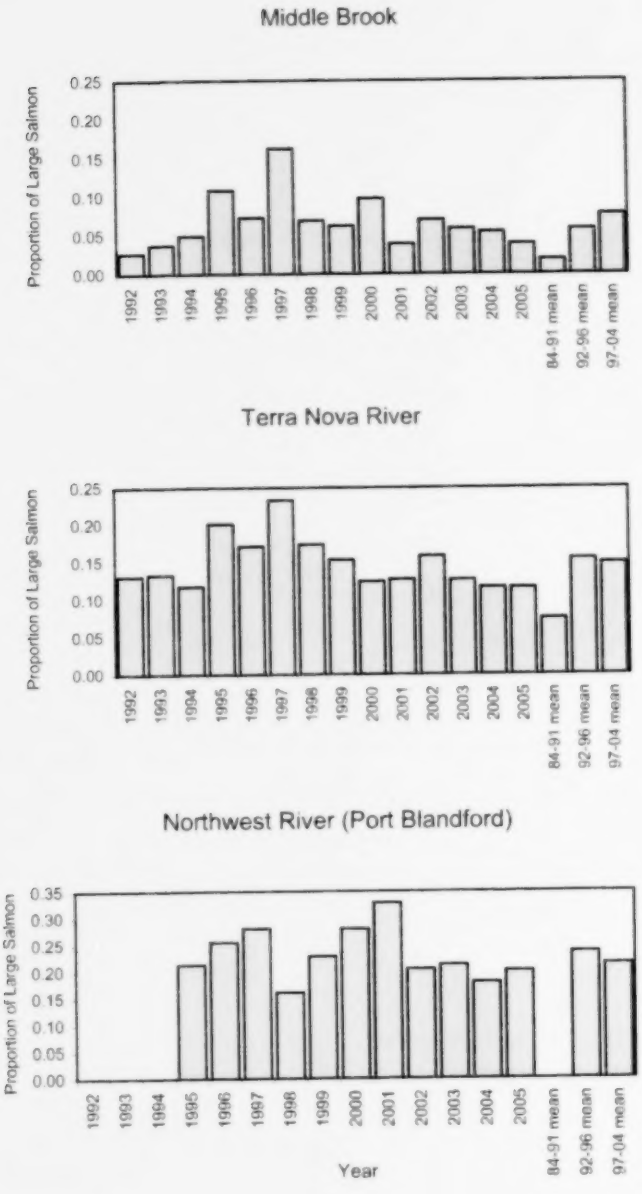

Fig. 9. Proportion of large salmon in total returns to Middle Brook, Terra Nova River and Northwest River, Port Blandford, (northeast coast), 1992-2005, and the 1984-1991, 1992-1996 and 1997-2004 means.

Northeast Coast

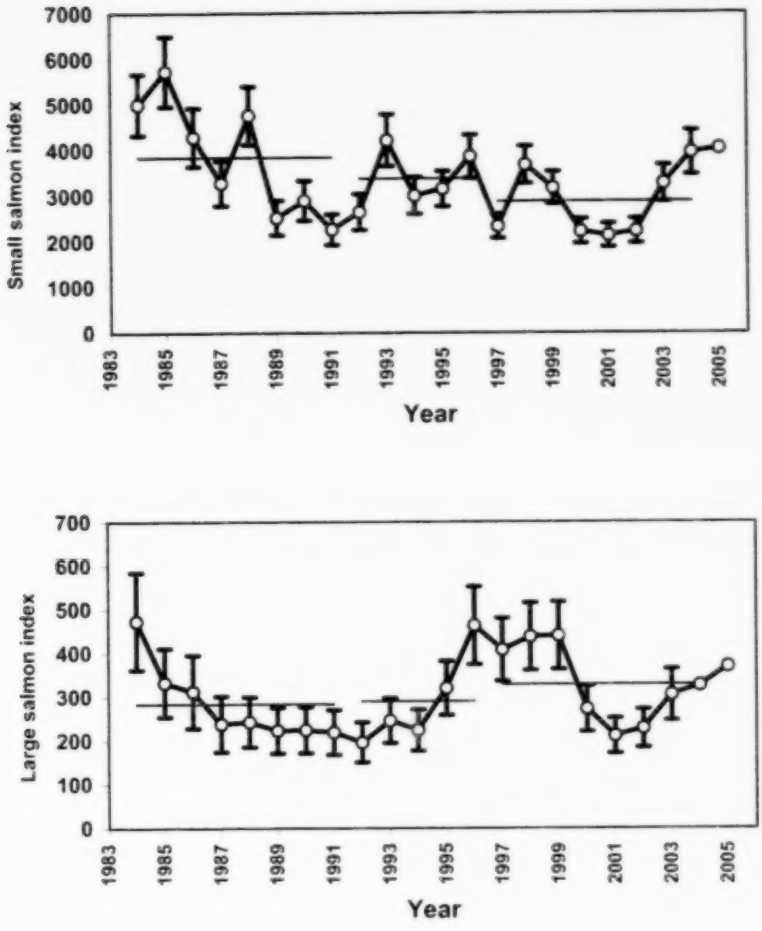

Figure 10. Trends in abundance of small (upper) and large (lower) salmon for northeast coast Newfoundland, SFAs 3-8, 1984 to 2005. Vertical lines represent ± 1 standard error. Horizontal lines illustrate the mean abundance index for the periods 1984-1991, 1992-1996, and 1997-2004.

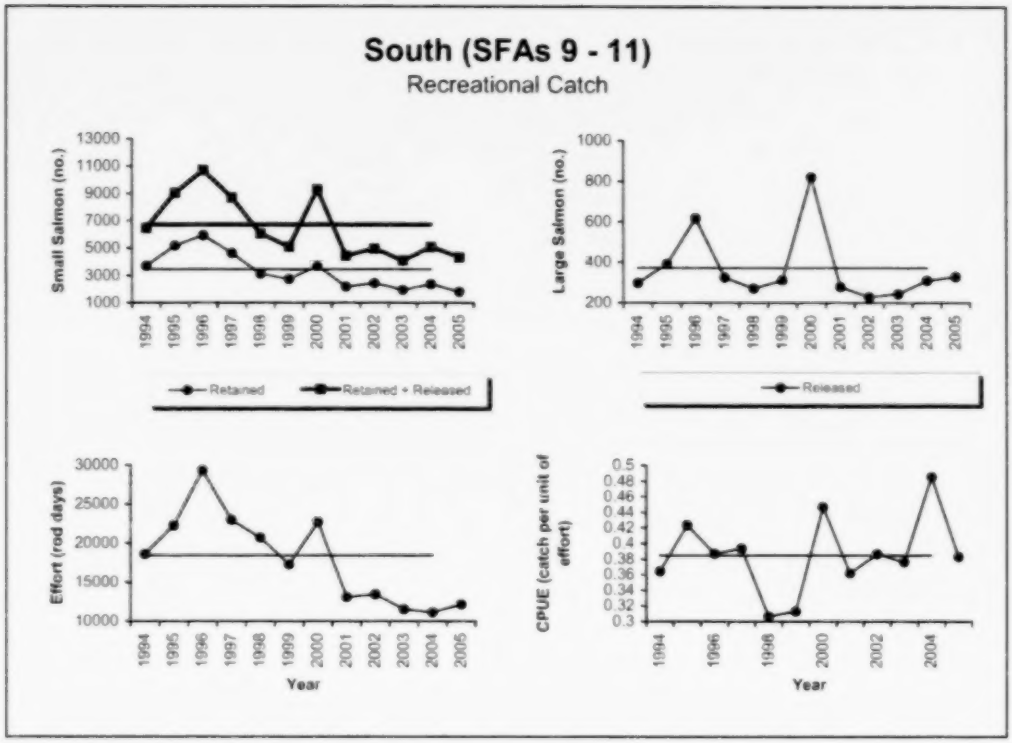

Fig. 11. Recreational catch of small salmon (retained and retained plus released), large salmon released, effort, and CPUE, 1994-2005, for South (SFAs 9-11). The thin horizontal line represents the 1994-2004 mean for small salmon retained, large released, effort and CPUE, and the thick horizontal line the 1994-2004 mean for retained and released small salmon combined.

SOUTH COAST

Total Returns

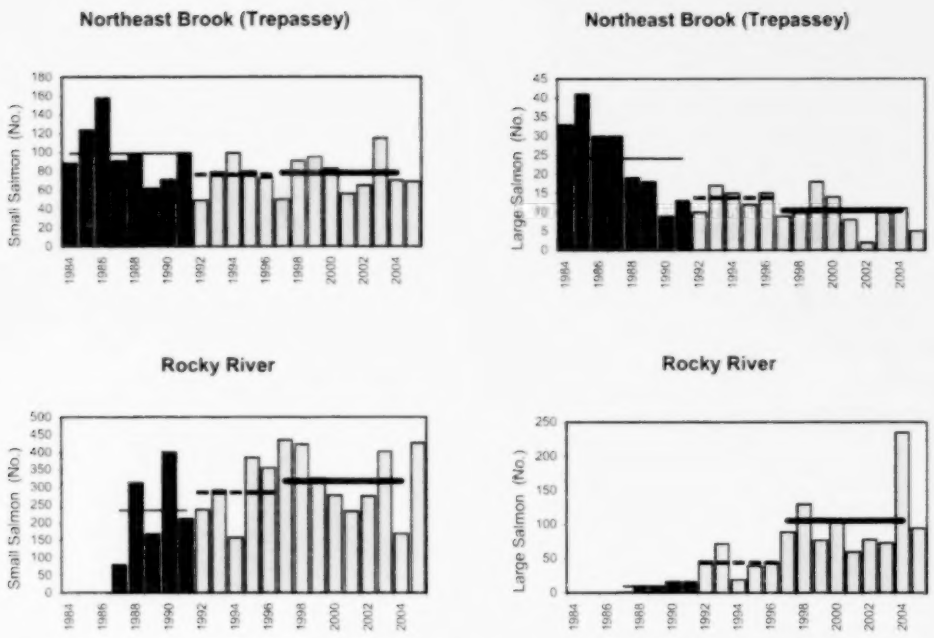

Fig. 12. Total returns of small and large salmon to Northeast Brook (Trepassey), Rocky River, Northeast River (Placentia), Little River and Conne River (south coast), 1984-2005. The thin solid horizontal line represents the 1984-1991 mean, the broken line the 1992-1996 mean, and the thick solid line the 1997-2004 mean. The dark gray bars represent the pre-moratorium years and the cross-hatched bars the moratorium years. Vertical lines are estimates of the 5th to 95th percentiles.

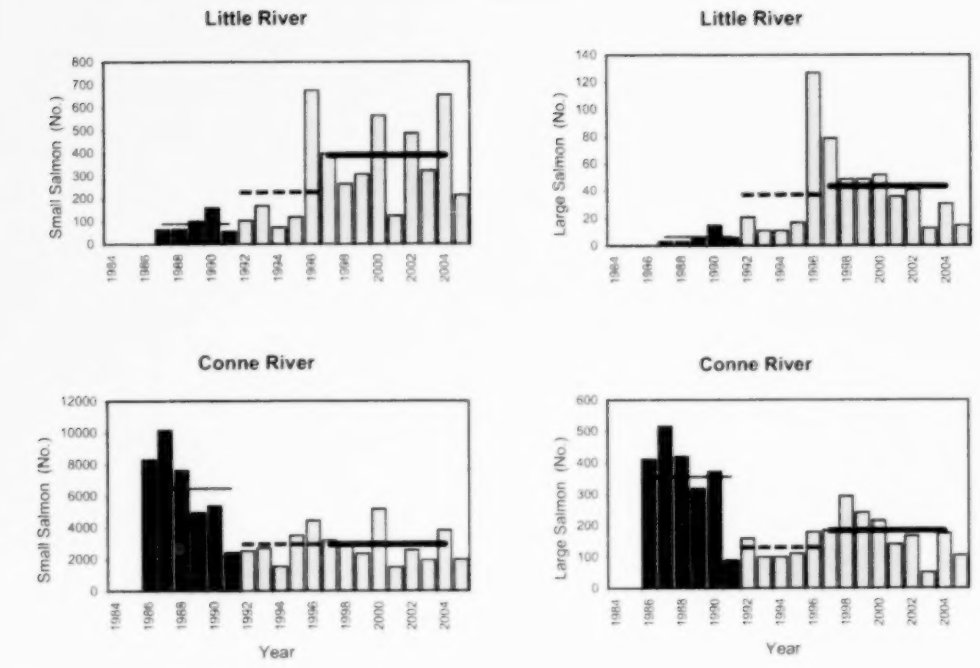

Figure 12 (cont'd.)

South Coast

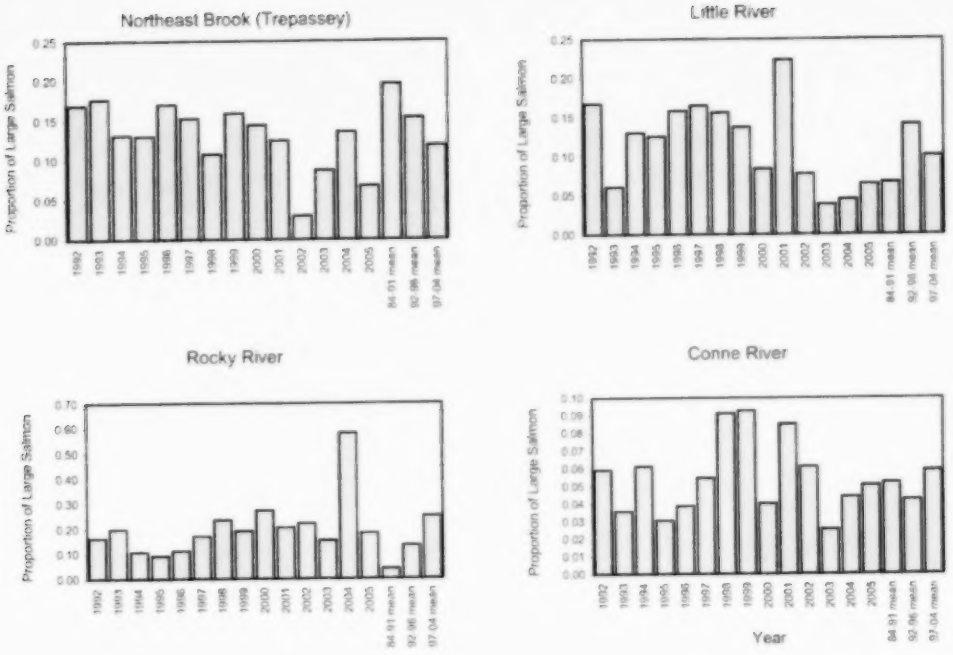

Fig. 13. Proportion of large salmon in total returns to Northeast Brook (Trepassey), Rocky River, Little River and Conne River, (south coast), 1992-2005, and the 1984-1991, 1992-1996 and 1997-2004 means.

South Coast

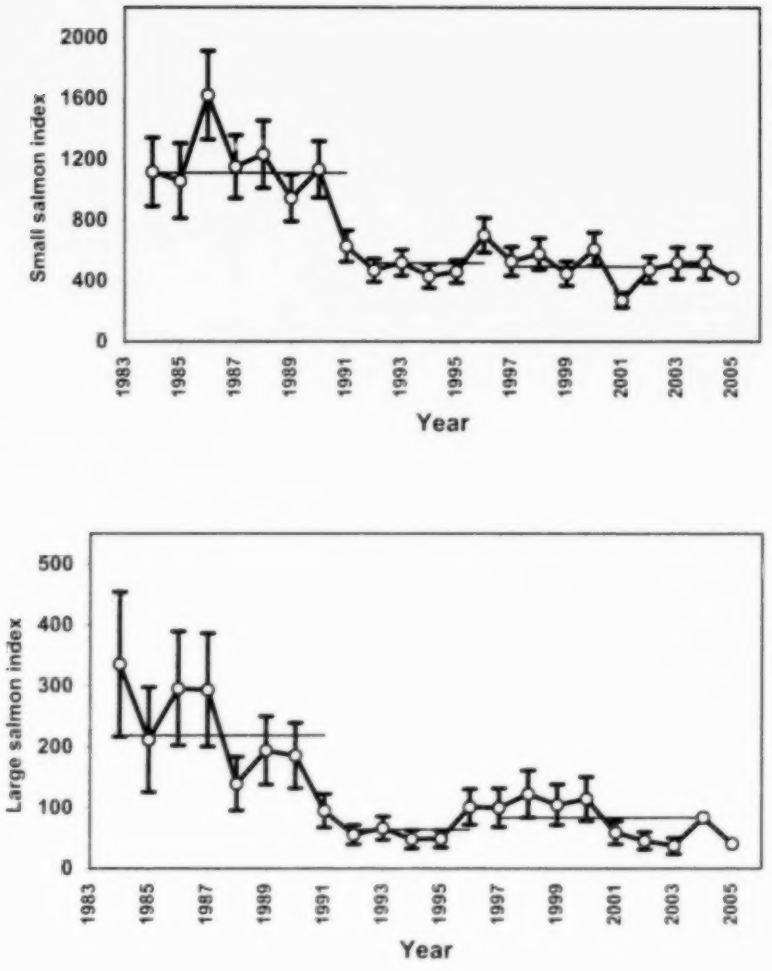

Figure 14. Trends in abundance of small (upper) and large (lower) salmon for south coast Newfoundland, SFAs 9-11, 1984 to 2005. Vertical lines represent ± 1 standard error. Horizontal lines illustrate the mean abundance index for the periods 1984-1991, 1992-1996, and 1997-2004.

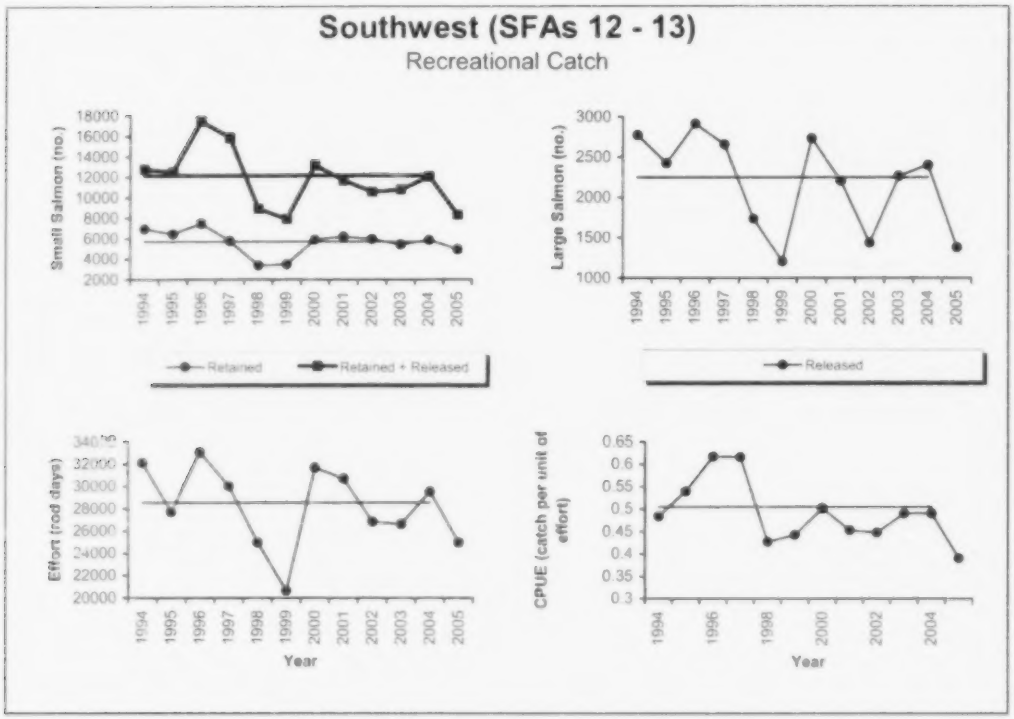

Fig. 15. Recreational catch of small salmon (retained and retained plus released), large salmon released, effort, and CPUE, 1994-2005, for Southwest (SFAs12-13). The thin horizontal line represents the 1994-2004 mean for small salmon retained, large released, effort and CPUE, and the thick horizontal line the 1994-2004 mean for retained and released small salmon combined.

SOUTHWEST COAST

Total Returns

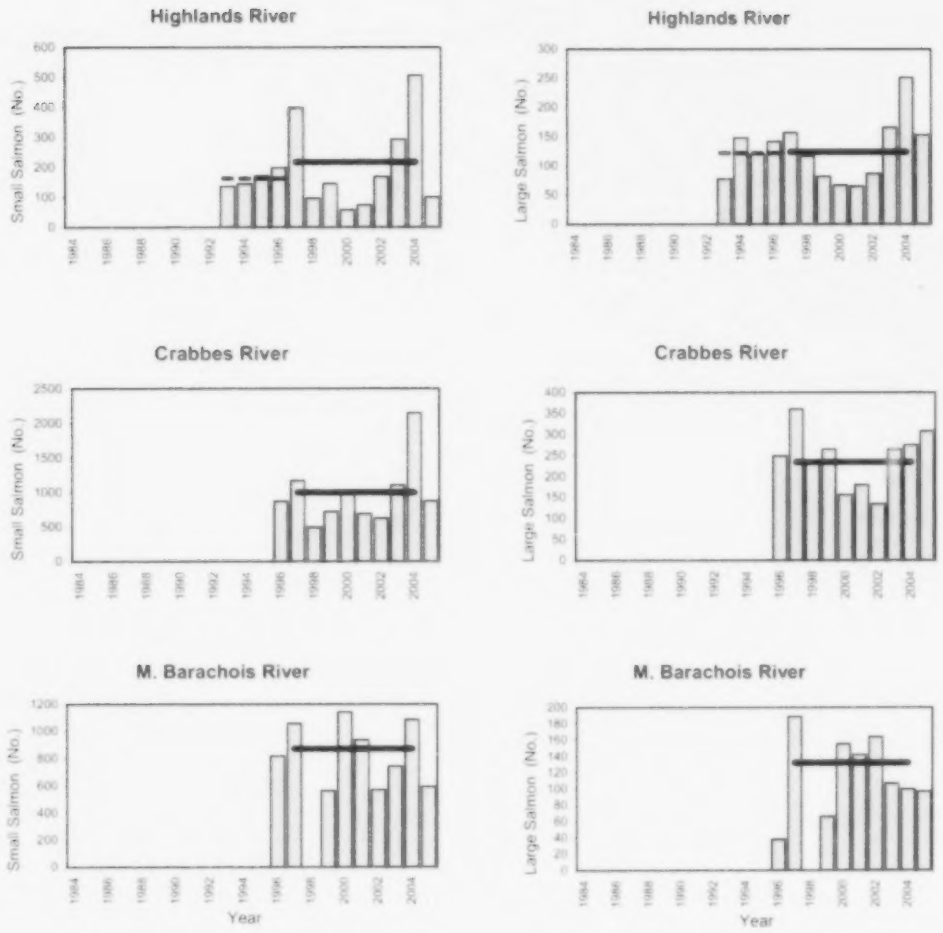

Fig. 16. Total returns of small and large salmon to Highlands River, Crabbes River, M. Barachois River, Robinsons River, Fischells River, Flat Bay Brook and Harry's River (southwest coast), 1984-2005. The broken horizontal line represents the 1992-1996 mean and the thick solid line the 1997-2004 mean.

SOUTHWEST COAST

Total Returns

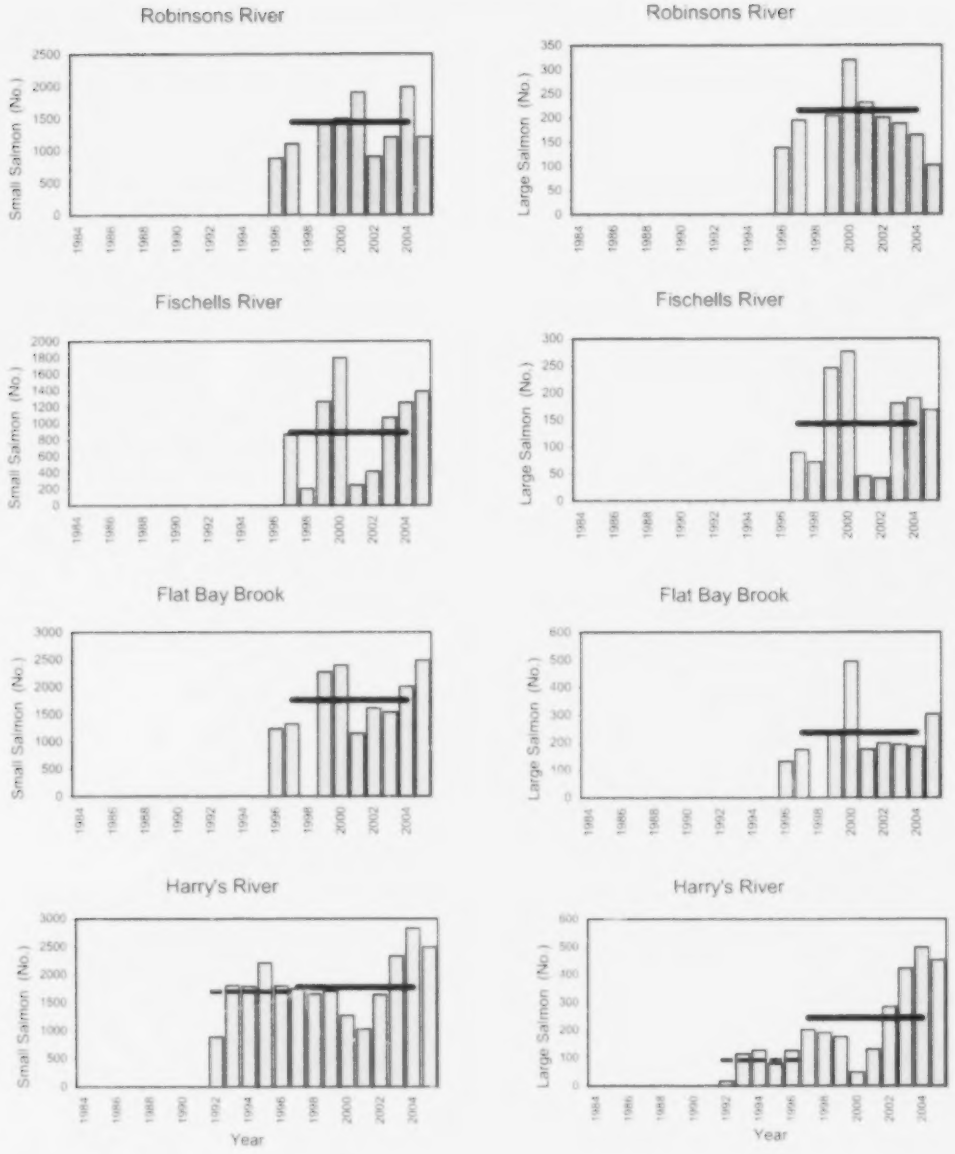

Figure 16 (cont'd.)

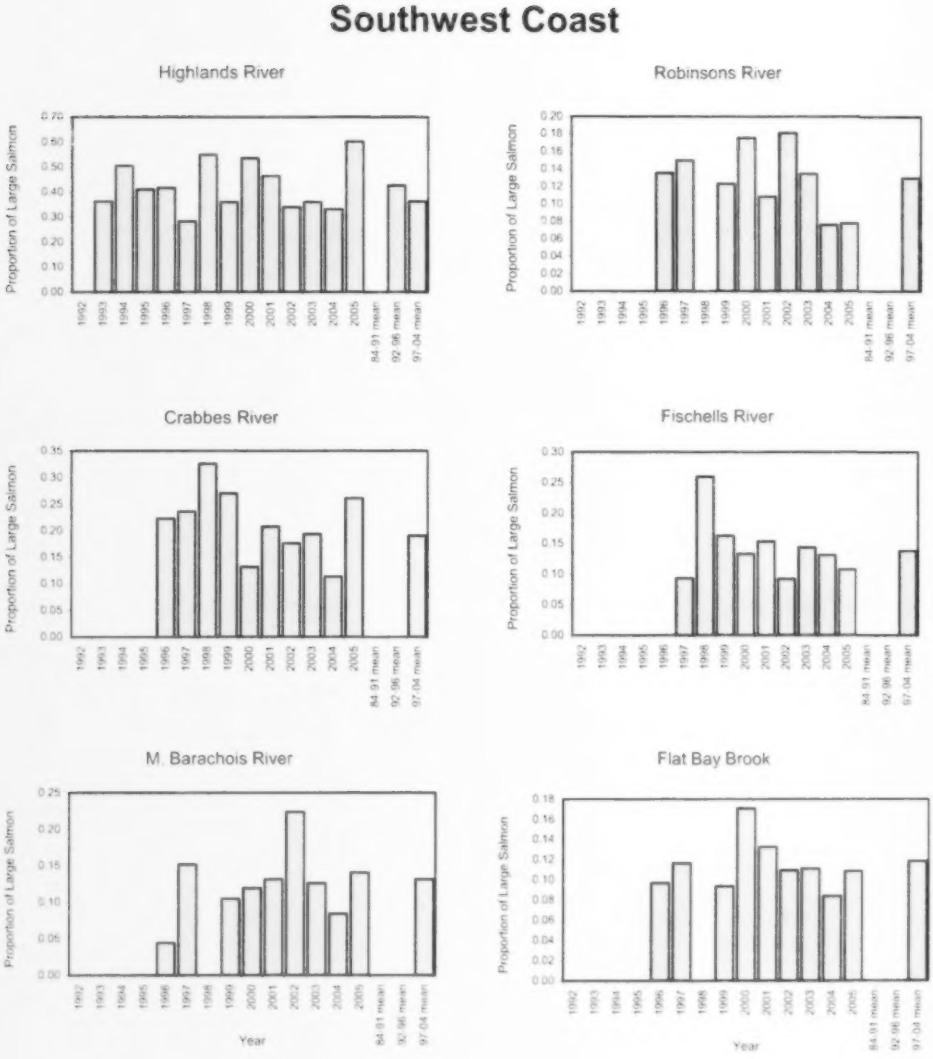

Fig. 17. Proportion of large salmon in total returns to Highlands River, Crabbes River, M. Barachois River, Robinsons River, Fischells River, Flat Bay Brook and Harry's River, (southwest coast), 1992-2005, and the 1984-1991, 1992-1996 and 1997-2004 means.

Southwest Coast

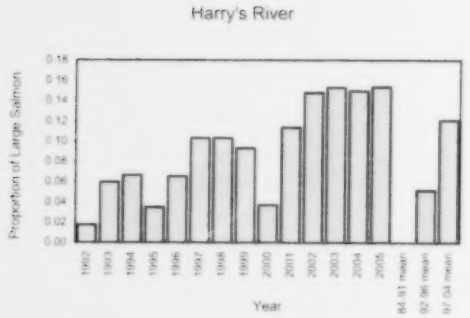

Figure 17 (cont'd.)

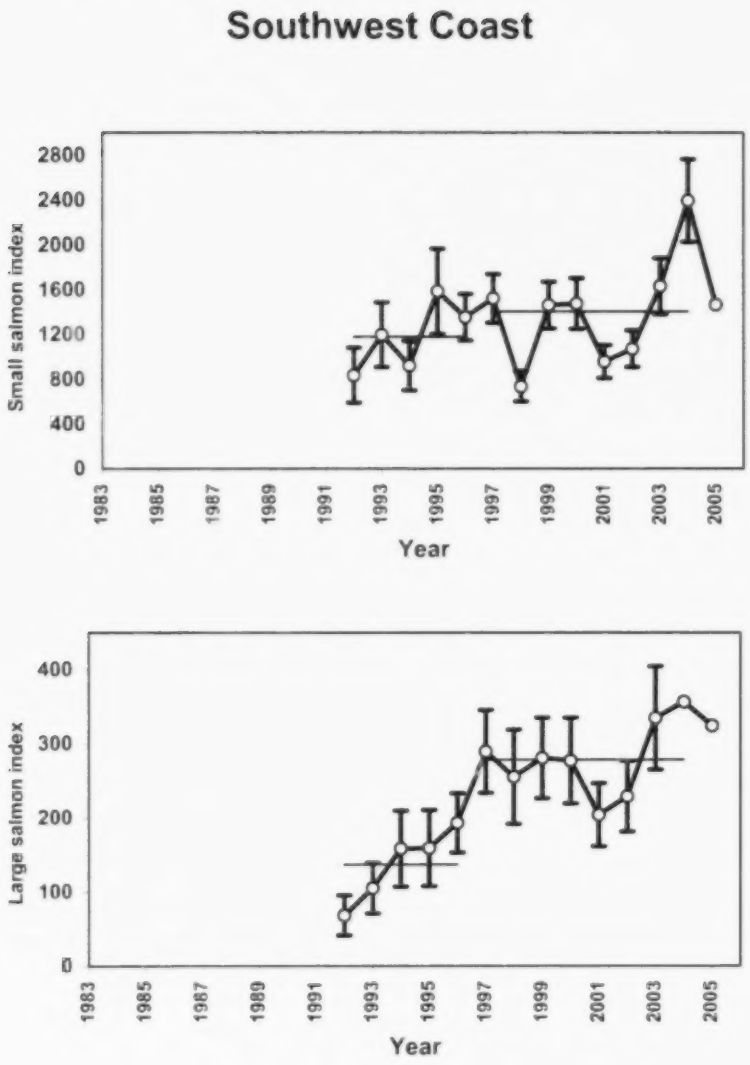

Figure 18. Trends in abundance of small (upper) and large (lower) salmon for southwest coast Newfoundland, SFA 13, 1992 to 2005. Vertical lines represent ± 1 standard error. Horizontal lines illustrate the mean abundance index for the

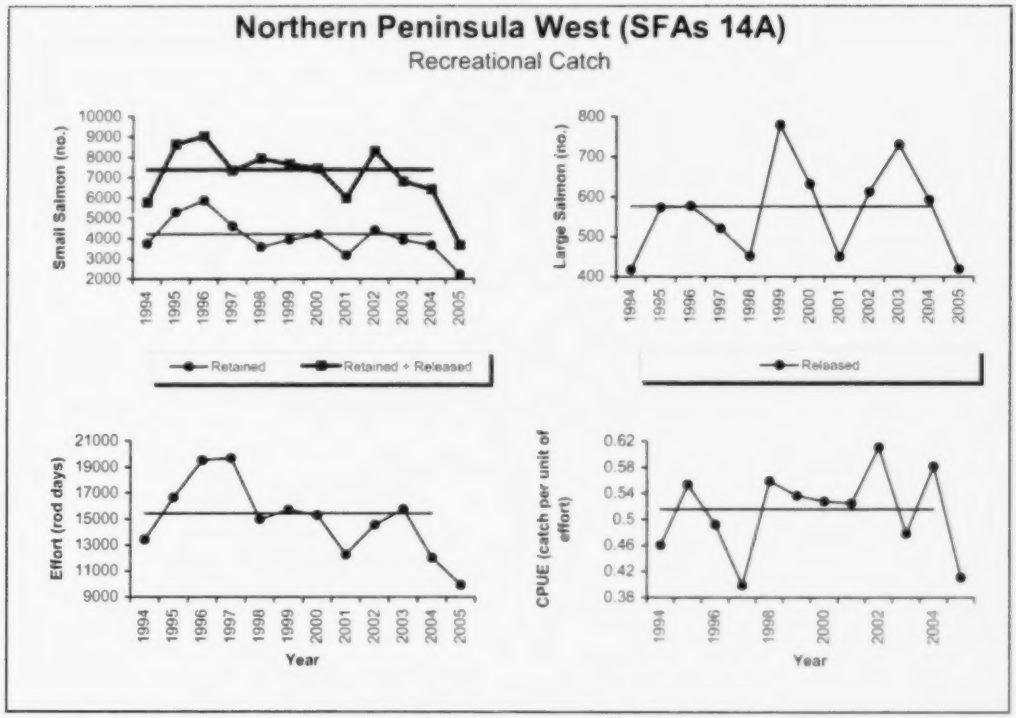

Fig. 19. Recreational catch of small salmon (retained and retained plus released), large salmon released, effort, and CPUE, 1994-2005, for Northern Peninsula West (SFA 14A). The thin horizontal line represents the 1994-2004 mean for small salmon retained, large released, effort and CPUE, and the thick horizontal line the 1994-2004 mean for retained and released small salmon combined.

NORTHWEST COAST

Total Returns

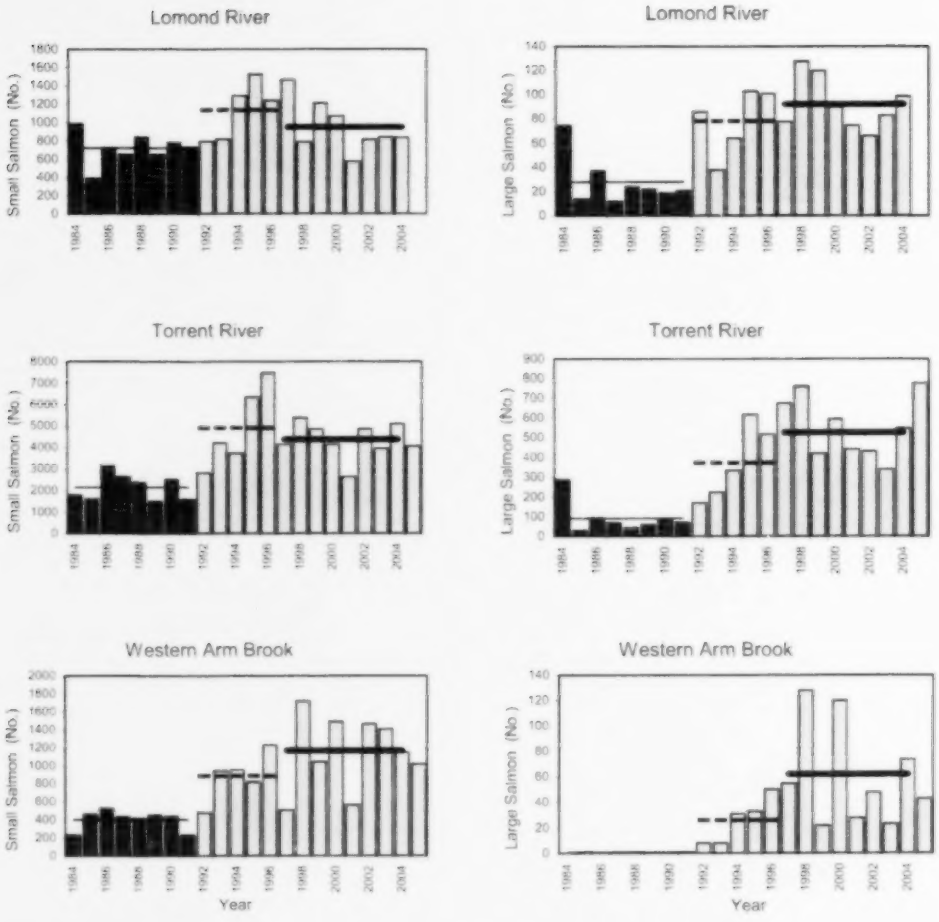

Fig. 20. Total returns of small and large salmon to Lomond River, Torrent River, and Western Arm Brook (northwest coast), 1984-2005. The thin horizontal line represents the 1984-1991 mean, the broken line the 1992-1996 mean and the thick solid line the 1997-2004 mean. The dark gray bars represent the pre-moratorium years and the cross-hatched bars the moratorium years.

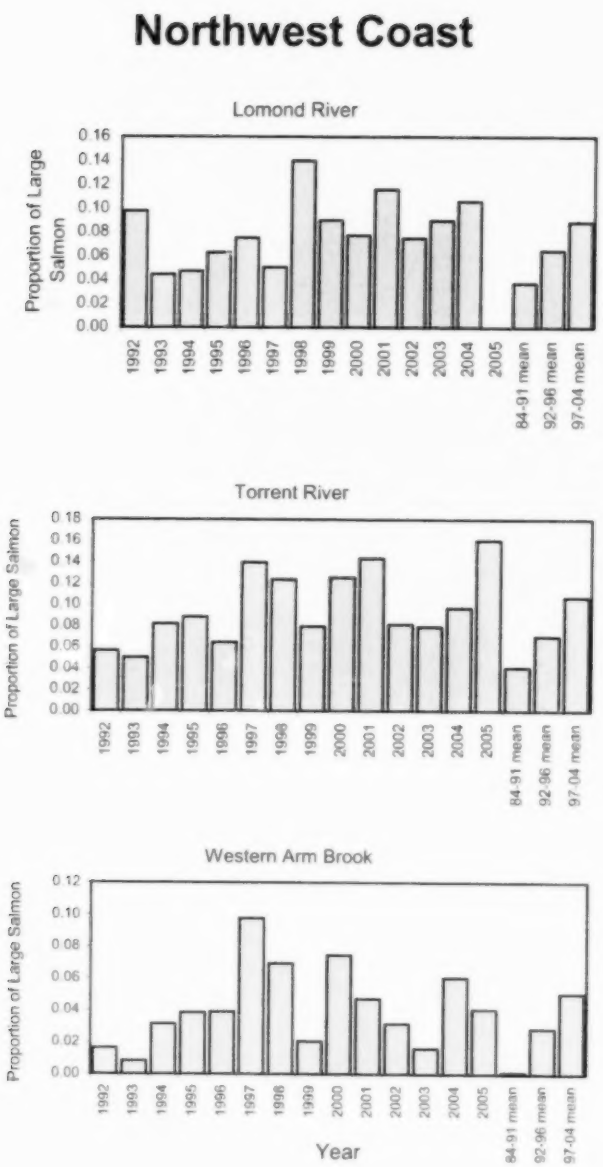

Fig. 21. Proportion of large salmon in total returns to Lomond River, Torrent River and Western Arm Brook, (northwest coast), 1992-2005, and the 1984-1991, 1992-1996 and 1997-2004 means.

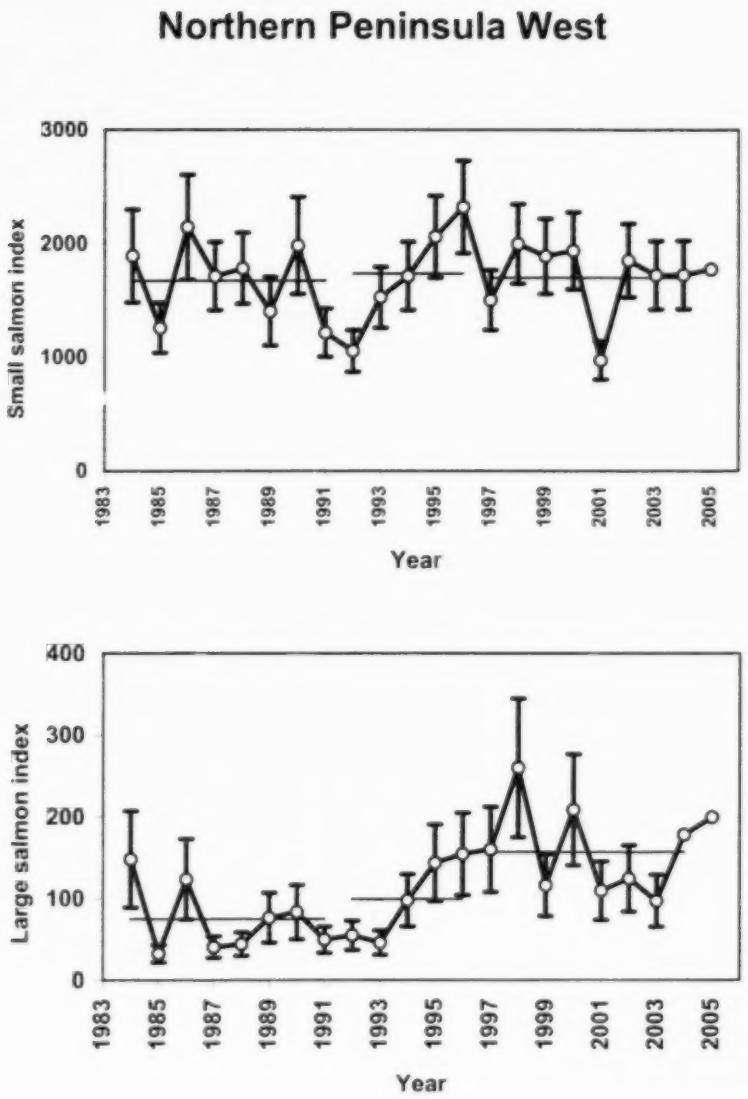

Figure 22. Trends in abundance of small (upper) and large (lower) salmon for the northern peninsula west, Newfoundland, SFA 14A, 1984 to 2005. Vertical lines represent ± 1 standard error. Horizontal lines illustrate the mean abundance index for the periods 1984-1991, 1992-1996, and 1997-2004.

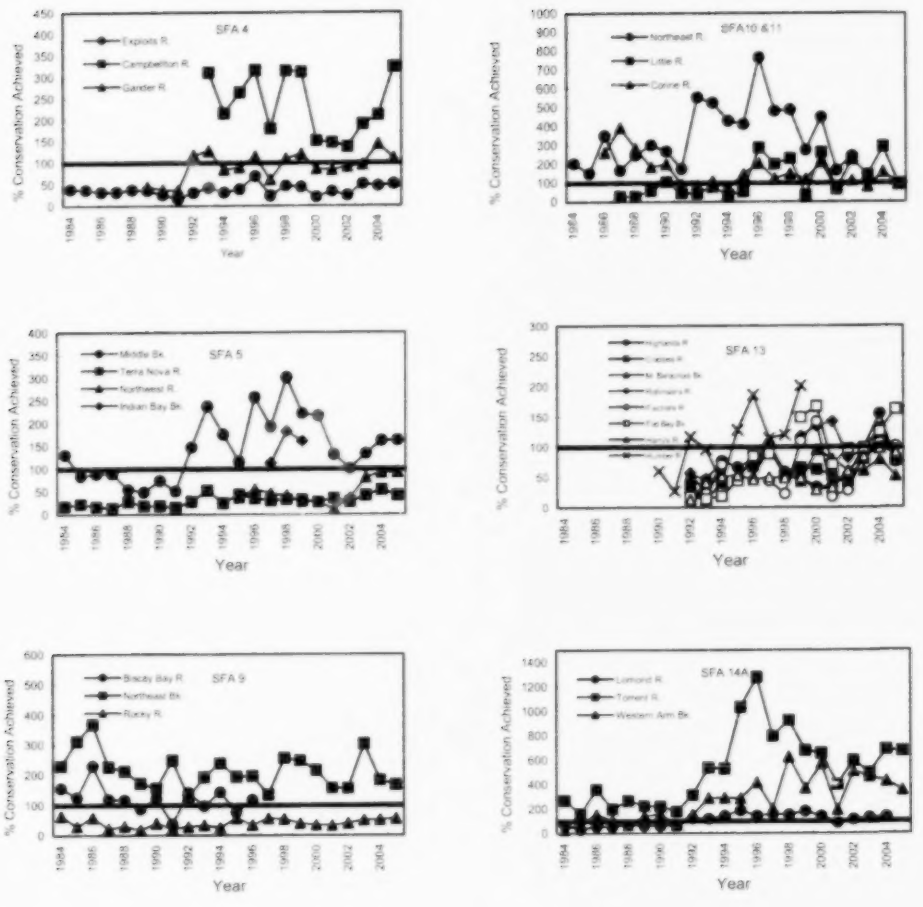

Fig. 23. Percent of conservation egg requirement achieved since 1984 for rivers in insular Newfoundland, by SFA. Horizontal line represents 100% of conservation requirement.

Appendix 1a. Atlantic salmon recreational fishery catch and effort data for insular Newfoundland (SFAs 3 - 14A), 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	132935	29225	20761	49986	*	4685	4685	29225	25446	54671	0.41
1995	128309	30512	22971	53483	*	4658	4658	30512	27629	58141	0.45
1996	153759	35440	30566	66006	*	5720	5720	35440	36286	71726	0.47
1997	123165	22819	23129	45948	*	4154	4154	22819	27283	50102	0.41
1998	123041	22668	27610	50278	*	3561	3561	22668	31171	53839	0.44
1999	123840	22870	20160	43030	*	3222	3222	22870	23382	46252	0.37
2000	127639	21808	22610	44418	*	5033	5033	21808	27643	49451	0.39
2001	102768	20977	17708	38685	*	3716	3716	20977	21424	42401	0.41
2002	95143	20913	18019	38932	*	3014	3014	20913	21033	41946	0.44
2003	94862	21226	16455	37681	*	3639	3639	21226	20094	41320	0.44
2004	91151	19946	17462	37408	*	3649	3649	19946	21111	41057	0.45
2005	81283	16719	13041	29760	*	2885	2885	16719	15926	32645	0.40
1994-2004 mean	117874	24400	21586	45987		4096	4096	24400	25682	50082	0.42
95% CL	13091	3365	2975	5811		560	560	3365	3359	6255	0.02
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1b. Atlantic salmon recreational fishery catch and effort data for Northern Peninsula East & Eastern (SFAs 3 - 8), 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	68793	14838	10145	24983	*	1196	1196	14838	11341	26179	0.38
1995	61670	13587	9693	23280	*	1269	1269	13587	10962	24549	0.40
1996	71876	16179	12604	28783	*	1611	1611	16179	14215	30394	0.42
1997	50451	7790	6253	14043	*	648	648	7790	6901	14691	0.29
1998	62367	12606	14742	27348	*	1103	1103	12606	15845	28451	0.46
1999	70198	12708	9651	22359	*	925	925	12708	10576	23284	0.33
2000	57989	8021	6480	14501	*	848	848	8021	7328	15349	0.26
2001	46684	9441	7096	16537	*	780	780	9441	7876	17317	0.37
2002	40296	8128	6992	15120	*	737	737	8128	7729	15857	0.39
2003	40957	9929	6075	16004	*	397	397	9929	6472	16401	0.40
2004	38454	8076	5743	13819	*	345	345	8076	6088	14164	0.37
2005	34195	7715	5690	13405	*	757	757	7715	6447	14162	0.41
1994-2004 mean	55430	11028	8679	19707		896	896	11028	9576	20603	0.37
95% CL	8467	2052	1990	3842		255	255	2052	2199	4066	0.04
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1c. Atlantic salmon recreational fishery catch and effort data for South (SFAs 9 - 11), 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	18587	3700	2772	6472	*	298	298	3700	3070	6770	0.36
1995	22293	5188	3863	9051	*	391	391	5188	4254	9442	0.42
1996	29290	5939	4772	10711	*	617	617	5939	5389	11328	0.39
1997	22978	4630	4088	8718	*	325	325	4630	4413	9043	0.39
1998	20708	3120	2957	6077	*	271	271	3120	3228	6348	0.31
1999	17294	2735	2368	5103	*	311	311	2735	2679	5414	0.31
2000	22674	3717	5592	9309	*	820	820	3717	6412	10129	0.45
2001	13118	2186	2282	4468	*	279	279	2186	2561	4747	0.36
2002	13447	2429	2536	4965	*	228	228	2429	2764	5193	0.39
2003	11526	1940	2152	4092	*	244	244	1940	2396	4336	0.38
2004	11139	2365	2731	5096	*	310	310	2365	3041	5406	0.49
2005	12175	1811	2522	4333	*	328	328	1811	2850	4661	0.38
1994-2004 mean	18459	3450	3283	6733	.	372	372	3450	3655	7105	0.38
95% CL	3870	888	762	1544	.	122	122	888	875	1639	0.03
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1d. Atlantic salmon recreational fishery catch and effort data for Southwest (SFAs 12 & 13), 1994-2005. Ret. = retained f ish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	32127	6953	5816	12769	*	2774	2774	6953	8590	15543	0.48
1995	27696	6450	6066	12516	*	2425	2425	6450	8491	14941	0.54
1996	33068	7461	10022	17483	*	2915	2915	7461	12937	20398	0.62
1997	30041	5790	10063	15853	*	2660	2660	5790	12723	18513	0.62
1998	24986	3374	5560	8934	*	1735	1735	3374	7295	10669	0.43
1999	20635	3499	4419	7918	*	1206	1206	3499	5625	9124	0.44
2000	31679	5891	7278	13169	*	2733	2733	5891	10011	15902	0.50
2001	30709	6188	5509	11697	*	2207	2207	6188	7716	13904	0.45
2002	26834	5950	4613	10563	*	1437	1437	5950	6050	12000	0.45
2003	26630	5440	5343	10783	*	2268	2268	5440	7611	13051	0.49
2004	29523	5838	6247	12085	*	2402	2402	5838	8649	14487	0.49
2005	24962	4964	3391	8355	*	1381	1381	4964	4772	9736	0.39
1994-2004 mean	28539	5712	6449	12161	.	2251	2251	5712	8700	14412	0.50
95% CL	2455	848	1301	1859	.	379	379	848	1597	2191	0.05
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1e. Atlantic salmon recreational fishery catch and effort data for the Northern Peninsula West (SFA 14A), 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	13428	3734	2028	5762	*	417	417	3734	2445	6179	0.46
1995	16650	5287	3349	8636	*	573	573	5287	3922	9209	0.55
1996	19525	5861	3168	9029	*	577	577	5861	3745	9606	0.49
1997	19695	4609	2725	7334	*	521	521	4609	3246	7855	0.40
1998	14980	3568	4351	7919	*	452	452	3568	4803	8371	0.56
1999	15713	3928	3722	7650	*	780	780	3928	4502	8430	0.54
2000	15297	4179	3260	7439	*	632	632	4179	3892	8071	0.53
2001	12257	3162	2821	5983	*	450	450	3162	3271	6433	0.52
2002	14566	4406	3878	8284	*	612	612	4406	4490	8896	0.61
2003	15749	3917	2885	6802	*	730	730	3917	3615	7532	0.48
2004	12035	3667	2741	6408	*	592	592	3667	3333	7000	0.58
2005	9951	2229	1438	3667	*	419	419	2229	1857	4086	0.41
1994-2004 mean	15445	4211	3175	7386	.	576	576	4211	3751	7962	0.52
95% CL	1689	532	432	715	.	76	76	532	458	741	0.04
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1f. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 3, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	11809	3667	2690	6357	*	201	201	3667	2891	6558	0.56
1995	8920	2589	2069	4658	*	293	293	2589	2362	4951	0.56
1996	10947	3492	2981	6473	*	267	267	3492	3248	6740	0.62
1997	7925	2148	1938	4086	*	164	164	2148	2102	4250	0.54
1998	10152	2917	3092	6009	*	229	229	2917	3321	6238	0.61
1999	8557	2037	1393	3430	*	75	75	2037	1468	3505	0.41
2000	9772	2192	1179	3371	*	168	168	2192	1347	3539	0.36
2001	7591	1789	1043	2832	*	151	151	1789	1194	2983	0.39
2002	5036	1742	1386	3128	*	125	125	1742	1511	3253	0.65
2003	7235	2075	1536	3611	*	70	70	2075	1606	3681	0.51
2004	3766	975	747	1722	*	57	57	975	804	1779	0.47
2005	3259	961	637	1598	*	101	101	961	738	1699	0.52
1994-2004 mean	8337	2329	1823	4152	.	164	164	2329	1987	4316	0.52
95% CL	1623	530	538	1042	.	53	53	530	579	1083	0.07
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1g. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 4, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	39900	8241	5837	14078	*	847	847	8241	6684	14925	0.37
1995	36736	7976	5904	13880	*	755	755	7976	6659	14635	0.40
1996	44128	9395	7746	17141	*	1138	1138	9395	8884	18279	0.41
1997	31462	4396	3697	8093	*	420	420	4396	4117	8513	0.27
1998	40632	7784	10040	17824	*	588	588	7784	10628	18412	0.45
1999	50159	9054	6975	16029	*	674	674	9054	7649	16703	0.33
2000	35213	4262	4097	8359	*	474	474	4262	4571	8833	0.25
2001	28090	6073	4637	10710	*	571	571	6073	5208	11281	0.40
2002	28340	5692	5186	10878	*	581	581	5692	5767	11459	0.40
2003	29042	7163	4258	11421	*	305	305	7163	4563	11726	0.40
2004	28128	6051	4437	10488	*	255	255	6051	4692	10743	0.38
2005	24957	5942	4485	10427	*	606	606	5942	5091	11033	0.44
1994-2004 mean	35621	6917	5710	12627	.	601	601	6917	6311	13228	0.37
95% CL	5005	1178	1281	2270	.	169	169	1178	1382	2387	0.04
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1h. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 5, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel.= released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	14727	2730	1547	4277	*	131	131	2730	1678	4408	0.30
1995	13557	2818	1672	4490	*	210	210	2818	1882	4700	0.35
1996	14328	3110	1786	4896	*	185	185	3110	1971	5081	0.35
1997	9690	1181	589	1770	*	58	58	1181	647	1828	0.19
1998	9683	1764	1556	3320	*	276	276	1764	1832	3596	0.37
1999	9591	1526	1156	2682	*	170	170	1526	1326	2852	0.30
2000	9581	1409	1080	2489	*	191	191	1409	1271	2680	0.28
2001	10257	1523	1392	2915	*	54	54	1523	1446	2969	0.29
2002	5799	642	338	980	*	23	23	642	361	1003	0.17
2003	4019	632	255	887	*	18	18	632	273	905	0.23
2004	5943	1023	551	1574	*	31	31	1023	582	1605	0.27
2005	5161	791	547	1338	*	46	46	791	593	1384	0.27
1994-2004 mean	9743	1669	1084	2753	.	122	122	1669	1206	2875	0.30
95% CL	2361	579	377	934	.	60	60	579	426	978	0.04
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1i. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 6, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	1772	151	63	214	*	15	15	151	78	229	0.13
1995	1505	98	14	112	*	5	5	98	19	117	0.08
1996	1561	115	59	174	*	16	16	115	75	190	0.12
1997	923	43	21	64	*	2	2	43	23	66	0.07
1998	947	80	33	113	*	4	4	80	37	117	0.12
1999	1382	59	28	87	*	4	4	59	32	91	0.07
2000	2744	128	63	191	*	11	11	128	74	202	0.07
2001	550	45	3	48	*	2	2	45	5	50	0.09
2002	648	40	19	59	*	6	6	40	25	65	0.10
2003	533	44	24	68	*	4	4	44	28	72	0.14
2004	529	22	0	22	*	2	2	22	2	24	0.05
2005	343	16	0	16	*	0	0	16	0	16	0.05
1994-2004 mean	1190	75	30	105		6	6	75	36	111	0.09
95% CL	462	28	15	42		3	3	28	18	45	0.02
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1j. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 7, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	290	18	6	24	*	0	0	18	6	24	0.08
1995	624	59	6	65	*	3	3	59	9	68	0.11
1996	543	27	0	27	*	0	0	27	0	27	0.05
1997	179	11	0	11	*	4	4	11	4	15	0.08
1998	661	37	0	37	*	2	2	37	2	39	0.06
1999	166	10	3	13	*	0	0	10	3	13	0.08
2000	199	18	6	24	*	0	0	18	6	24	0.12
2001	179	8	21	29	*	2	2	8	23	31	0.17
2002	187	0	9	9	*	0	0	0	9	9	0.05
2003	104	10	2	12	*	0	0	10	2	12	0.12
2004	26	0	0	0	*	0	0	0	0	0	0.00
2005	445	0	4	4	*	4	4	0	8	8	0.02
1994-2004 mean	287	18	5	23		1	1	18	6	24	0.08
95% CL	147	12	4	12		1	1	12	4	12	0.03
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1k. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 8, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	295	31	2	33	*	2	2	31	4	35	0.12
1995	328	47	28	75	*	3	3	47	31	78	0.24
1996	369	40	32	72	*	5	5	40	37	77	0.21
1997	272	11	8	19	*	0	0	11	8	19	0.07
1998	292	24	21	45	*	4	4	24	25	49	0.17
1999	343	22	96	118	*	2	2	22	98	120	0.35
2000	480	12	55	67	*	4	4	12	59	71	0.15
2001	17	3	0	3	*	0	0	3	0	3	0.18
2002	286	12	54	66	*	2	2	12	56	68	0.24
2003	24	5	0	5	*	0	0	5	0	5	0.21
2004	62	5	8	13	*	0	0	5	8	13	0.21
2005	30	5	17	22	*	0	0	5	17	22	0.73
1994-2004 mean	252	19	28	47	.	2	2	19	30	49	0.19
95% CL	101	10	20	24	.	1	1	10	21	25	0.06
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1l. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 9, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	5708	843	403	1246	*	48	48	843	451	1294	0.23
1995	7194	1350	843	2193	*	138	138	1350	981	2331	0.32
1996	7701	1076	704	1780	*	123	123	1076	827	1903	0.25
1997	5928	664	452	1116	*	65	65	664	517	1181	0.20
1998	5104	698	592	1290	*	100	100	698	692	1390	0.27
1999	5034	585	291	876	*	103	103	585	394	979	0.19
2000	6611	891	458	1349	*	147	147	891	605	1496	0.23
2001	3161	311	237	548	*	64	64	311	301	612	0.19
2002	2751	318	364	682	*	63	63	318	427	745	0.27
2003	2112	214	306	520	*	40	40	214	346	560	0.27
2004	1520	235	172	407	*	40	40	235	212	447	0.29
2005	3263	296	370	666	*	93	93	296	463	759	0.23
1994-2004 mean	4802	653	438	1092	.	85	85	653	523	1176	0.24
95% CL	1418	248	137	375	.	26	26	248	157	396	0.03
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1m. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 10, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	4872	713	270	983	*	56	56	713	326	1039	0.21
1995	5921	1109	446	1555	*	82	82	1109	528	1637	0.28
1996	10641	1475	825	2300	*	161	161	1475	986	2461	0.23
1997	6723	926	588	1514	*	95	95	926	683	1609	0.24
1998	9425	1163	525	1688	*	88	88	1163	613	1776	0.19
1999	5903	745	552	1297	*	151	151	745	703	1448	0.25
2000	7434	867	1077	1944	*	454	454	867	1531	2398	0.32
2001	3731	445	432	877	*	104	104	445	536	981	0.26
2002	5172	616	477	1093	*	105	105	616	582	1198	0.23
2003	3552	362	411	773	*	54	54	362	465	827	0.23
2004	3200	451	359	810	*	56	56	451	415	866	0.27
2005	3946	442	465	907	*	96	96	442	561	1003	0.25
1994-2004 mean	6052	807	542	1349		128	128	807	670	1476	0.24
95% CL	1601	231	153	335		76	76	231	225	384	0.03
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1n. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 11, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	8007	2144	2099	4243	*	194	194	2144	2293	4437	0.55
1995	9178	2729	2574	5303	*	171	171	2729	2745	5474	0.60
1996	10948	3388	3243	6631	*	333	333	3388	3576	6964	0.64
1997	10327	3040	3048	6088	*	165	165	3040	3213	6253	0.61
1998	6179	1259	1840	3099	*	83	83	1259	1923	3182	0.51
1999	6357	1405	1525	2930	*	57	57	1405	1582	2987	0.47
2000	8629	1959	4057	6016	*	219	219	1959	4276	6235	0.72
2001	6226	1430	1613	3043	*	111	111	1430	1724	3154	0.51
2002	5524	1495	1695	3190	*	60	60	1495	1755	3250	0.59
2003	5862	1364	1435	2799	*	150	150	1364	1585	2949	0.50
2004	6419	1679	2200	3879	*	214	214	1679	2414	4093	0.64
2005	4966	1073	1687	2760	*	139	139	1073	1826	2899	0.58
1994-2004 mean	7605	1990	2303	4293		160	160	1990	2462	4453	0.59
95% CL	1284	501	564	977		55	55	501	604	1020	0.05
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1o. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 12, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	2665	774	385	1159	*	88	88	774	473	1247	0.47
1995	2119	582	232	814	*	67	67	582	299	881	0.42
1996	2750	899	439	1338	*	119	119	899	558	1457	0.53
1997	3199	832	699	1531	*	110	110	832	809	1641	0.51
1998	2456	351	415	766	*	108	108	351	523	874	0.36
1999	1304	166	151	317	*	26	26	166	177	343	0.26
2000	1859	299	440	739	*	45	45	299	485	784	0.42
2001	2062	335	485	820	*	80	80	335	565	900	0.44
2002	1803	385	395	780	*	42	42	385	437	822	0.46
2003	2773	568	666	1234	*	110	110	568	776	1344	0.48
2004	1666	382	450	832	*	58	58	382	508	890	0.53
2005	2100	415	586	1001	*	81	81	415	667	1082	0.52
1994-2004 mean	2241	507	432	939		78	78	507	510	1017	0.45
95% CL	385	162	107	230		22	22	162	122	248	0.05
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1p. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 13, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	29462	6179	5431	11610	*	2686	2686	6179	8117	14296	0.49
1995	25577	5868	5834	11702	*	2358	2358	5868	8192	14060	0.55
1996	30318	6562	9583	16145	*	2796	2796	6562	12379	18941	0.62
1997	26842	4958	9364	14322	*	2550	2550	4958	11914	16872	0.63
1998	22530	3023	5145	8168	*	1627	1627	3023	6772	9795	0.43
1999	19331	3333	4268	7601	*	1180	1180	3333	5448	8781	0.45
2000	29820	5592	6838	12430	*	2688	2688	5592	9526	15118	0.51
2001	28647	5853	5024	10877	*	2127	2127	5853	7151	13004	0.45
2002	25031	5565	4218	9783	*	1395	1395	5565	5613	11178	0.45
2003	23857	4872	4677	9549	*	2158	2158	4872	6835	11707	0.49
2004	27857	5456	5797	11253	*	2344	2344	5456	8141	13597	0.49
2005	22862	4549	2805	7354	*	1300	1300	4549	4105	8654	0.38
1994-2004 mean	26297	5206	6016	11222		2174	2174	5206	8190	13395	0.51
95% CL	2304	749	1254	1688		369	369	749	1536	2007	0.05
N	11	11	11	11		11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

Appendix 1q. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 14A, insular Newfoundland, 1994-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (≥63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1994	13428	3734	2028	5762	*	417	417	3734	2445	6179	0.46
1995	16650	5287	3349	8636	*	573	573	5287	3922	9209	0.55
1996	19525	5861	3168	9029	*	577	577	5861	3745	9606	0.49
1997	19695	4609	2725	7334	*	521	521	4609	3246	7855	0.40
1998	14980	3568	4351	7919	*	452	452	3568	4803	8371	0.56
1999	15713	3928	3722	7650	*	780	780	3928	4502	8430	0.54
2000	15297	4179	3260	7439	*	632	632	4179	3892	8071	0.53
2001	12257	3162	2821	5983	*	450	450	3162	3271	6433	0.52
2002	14566	4406	3878	8284	*	612	612	4406	4490	8896	0.61
2003	15749	3917	2885	6802	*	730	730	3917	3615	7532	0.48
2004	12035	3667	2741	6408	*	592	592	3667	3333	7000	0.58
2005	9951	2229	1438	3667	*	419	419	2229	1857	4086	0.41
1994-2004 mean	15445	4211	3175	7386	.	576	576	4211	3751	7962	0.52
95% CL	1689	532	432	715	.	76	76	532	458	741	0.04
N	11	11	11	11	.	11	11	11	11	11	11

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS IN TERMS OF SMALL AND LARGE SALMON COMBINED (RETAINED + RELEASED FISH).
* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.